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HORMONES IN UROLOGY

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This discussion will be limited to endocrine therapy in testicular dysfunctions and in carcinoma of the prostate.

Testicular Disorders

In order to comprehend fully the various treatments for testicular disorders, one must know something about the physiology of the pituitary gland as well as of the testes. The primary function of the testes is to ensure survival of the race. Thus, the testes must not only produce spermatozoa, but must also elaborate an androgenic hormone which will make it possible for the male to demonstrate sexual reactions to the female, and will develop and maintain the accessory reproductive organs so that effective insemination can be accomplished. Numerous workers have shown that testosterone or similar androgens will stimulate the growth of the penis, seminal vesicles and scrotum, will cause descent of the testes, and will activate the growth of the prostate and its glandular elements to produce acid phosphatase and other components of prostatic secretion. These developments, which are normally part of pubescence, enable the male to deposit his spermatozoa in the proper place and in a medium of prostatic and seminal secretion, which will ensure survival of the spermatozoa for a long enough period to permit fertilization of the ovum. Other changes occurring in the male at puberty are deepening of the voice, with an increase in the size of the laryngeal prominence; growth of hair in the pubic, axillary, and facial regions; increase in the rate of epiphyseal maturity; stimulation of muscular development, with an increase in strength and endurance.

Spermatozoa are produced in the seminiferous tubules, while the androgenic hormone is elaborated by the interstitial or Leydig cells. In general, these separate testicular functions respond in a parallel manner to the influence of many agents; in a person affected by inanition, for example, there is diminution of the androgenic secretion and also a decrease in spermatogenesis. There are a few situations, however, in which spermatogenesis is diminished or completely absent, while androgen production is normal; such situations may occur in patients with irradiated or cryptorchid testes.

The spermatogenic and endocrine functions of the testes are induced and maintained by gonadotropins from the basophilic cells of the anterior lobe of the pituitary. The secretions of the testes in turn inhibit or limit the production of the gonad-stimulating material. A delicate balance thus exists between pituitary function and gonadal function; a loss of testicular function leads to increased secretion of pituitary gonadotropins, whereas an interstitial cell tumor of the testis or the administration of exogenous androgens (for example, testosterone propionate) suppresses pituitary production of the gonadotropic substances. A loss or diminution in pituitary function diminishes the secretion of androgen by the

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testes, while injection of the gonadotropic principle from the pituitary stimulates production of the testicular hormone. There is considerable evidence at the present time to indicate that the fluctuations in urinary gonadotropin levels may depend upon the ability of the testes to metabolize the pituitary gonadotropic material rather than upon a mysterious inhibitory effect exerted by the testes.

The pituitary gland stimulates the gonads in two ways: the follicle-stimulating hormone influences the spermatogenic function of the seminiferous tubules, and the luteinizing hormone regulates the activity of the interstitial cells in their production of male hormone. The urine of pregnant women contains a gonadotropic hormone elaborated by the chorionic cells of the placenta. It has been named chorionic gonadotropin, and superficially behaves like the luteinizing hormone of the pituitary. Another type of gonadotropic hormone is produced by the placenta of the pregnant mare and is present in the blood of that animal during pregnancy. It differs from human pregnancy gonadotropin in two respects: (1) it is not excreted in the urine, and (2) it possesses both follicle-stimulating and luteinizing properties. Preparations of all three types of hormones have been used clinically.

Cryptorchidism

A testicular abnormality occurring quite commonly in childhood is cryptorchidism, or failure of one or both testes to descend into the scrotum properly. It is stated that in the majority of cases the descent of the testes is completed during the ninth month of fetal life. It is not uncommon, however, for boys to have partially descended testes until the age of puberty, at which time descent is completed. One must distinguish between true cryptorchidism and pseudocryptorchidism before any therapy is contemplated. Intermittent retraction of the testes is commonly confused with true retention. Hamilton and Hubert[1] have described a technique whereby true retention can be distinguished from false retention. Essentially it consists in putting the child at ease and doing a mock painless examination of the scrotum. Then a hot water bag wrapped in flannel is applied to the scrotum, groin and perineum, and the patient is covered with blankets. After thirty minutes the examination is repeated. Another method that we have employed involves observation by the mother or physician when the child is asleep in bed. In cases of pseudocryptorchidism, the relaxing effect of warmth will usually cause both testicles to descend into the scrotum.

No testis should be allowed to remain undescended after the onset of puberty, for the following reasons: (1) Spermatogenesis is inhibited or prevented by body temperature at the abnormal site, and the normal development of this function can occur only when the testis is situated in the scrotum, where the temperature is optimal for spermatogenesis; (2) the incidence of testicular tumors in ectopic testes has been found by Lewis[2] to be twenty-two times as great as in normal gonads. Unfortunately, this high incidence prevails even if the undescended testes are brought down into the scrotum. Unobserved development of testicular tumor, however, is less likely if the gonad is in the scrotum than if it is in the abdomen.

Therapy for cryptorchidism involves the use of surgery, endocrines, or a combination of both. In cases of unilateral cryptorchidism surgery alone is employed as soon as the condition is diagnosed. It is believed that in such cases the failure of descent is due to anatomic factors such as fibrous bands, or abnormal direction of the peritoneal process, and not to hormonal deficiency. If true bilateral cryptorchidism is diagnosed, no treatment is initiated until the age of puberty is reached. At that time therapy with chorionic gonadotropin is given an adequate trial — 100-500 international units being administered intramuscularly three to six times per week for eight weeks. If descent does not occur at the end of this period, then surgery should be performed.

It is the policy of the University of Michigan Urology Clinic not to use hormone therapy before pubescence. Numerous workers have demonstrated that the administration of either testosterone or gonadotropin before puberty can result in marked growth of the penis, deepening of the voice, premature

1. Hamilton, J. B. and Hubert, G.: Differential Diagnosis of Pseudocryptorchidism and True Cryptorchidism, Endocrinology, 21:644-648 (Sept.) 1937.

2. Lewis, L. C.: Testis Tumors, J. Urol. 59:763-772 (April) 1948.

closure of the epiphyses, growth of pubic, axillary and trunk hair, and abnormal muscular development. In addition to the danger of dwarfism, premature somatic puberty is apt to have a deleterious effect on the psyche and mental development. Certainly the potential dangers of endocrine administration during early childhood should be emphasized, and the unnecessary or early employment of these hormones is to be deplored.

Eunuchoidism and eunuchism

When the secretion of the interstitial tissue of the testes is diminished or lacking, certain characteristic changes occur in the individual. Deficiency of testicular secretion beginning in childhood gives rise to the eunuchoid state, which is characterized by small genitalia, extraordinary length of the long bones, high-pitched voice, small laryngeal prominence, lack of muscular development, at times a characteristic distribution of adipose tissue, and a beard composed of fine hair.

Postpuberal interruption of testicular function, or the castrate state, will not affect the long bones, since closure of the epiphysis has already occurred. The secondary sexual characteristics show some evidences of regression, but such organs as the larynx and genitalia do not return to an immature state.

The eunuch may show a decrease in the 17-ketosteroids, and always shows an increase in the urinary gonadotropin level—a phenomenon that can be used to determine objectively a decrease or absence of testicular function. The skin is soft and of a pasty, sallow color, which is due to lack of cutaneous pigments (melanin). The volume of blood in the skin and the percentage of oxygenated hemoglobin are less than in normal men. The buttock, however, contains more blood than in normal men. The beard of the eunuchoid is soft, whereas the postpuberal castrate retains many hairs of large diameter. The hair and skin are quite dry, and sebaceous secretions are diminished. Acne does not occur in either type. In both eunuchoid and castrate men, adipose tissue may be deposited subcutaneously about the mammary glands, the mons pubis, and the trochanter. In the prepuberal eunuch the vocal pitch and range remain high, while the mature voice of the postpuberal castrate is largely maintained. Many of the patients complain of fatigue and inability to carry on sustained work.

In the eunuchoid man the external genitalia are very small, and the prostate and seminal vesicles may not be palpable rectally. The postpuberal castrate individual demonstrates a mature penis, but the scrotum appears flat and small; and penile erections in general are of limited number and completeness, and semen is absent.

The use of androgens is clearly indicated after bilateral orchiectomy or in severe eunuchoidism, in order to relieve the fatigability and sexual incapacity of these individuals. Androgens should be administered to adolescents who demonstrate signs of delayed epiphyseal closure and hypogenitalism, in order to prevent the development of severe eunuchoidism.

In these children it is not always easy to establish the diagnosis early, because young boys vary in their body types and in the arrangement and amount of their subcutaneous adipose tissue; furthermore, the relative size of the genitalia is often difficult to evaluate.

The problem of hypogenitalism at puberty is thoroughly discussed in a recent article by Hurxthal[3]. His diagnostic criteria include accurate measurements of the gonads, endocrine assays, and in some instances testicular biopsy. Early recognition and treatment are desirable if the stigmas of eunuchoidism are to be avoided, and with this fact in mind the physician would be well advised to treat empirically any suspected cases at the time of pubescence. The use of gonadotropic hormones should be tried first, because in some instances the hypogenitalism appears to depend upon lack of the pituitary-gonad stimulus. In the event that this treatment fails, the condition may be due to primary testicular failure and may require the administration of testosterone in moderate doses. It has been pointed out that many patients recover permanently after short periods of treatment with these hormones.

In adult cases of eunuchoidism, therapy with testosterone produces marked masculinization even in persons castrate for more than a decade. Erectile ability may be enhanced within several hours; changes in blood volume and pigments of the skin take

3. Hurxthal, L. M.: Hypogenitalism During the Usual Time of Puberty, J.A.M.A. 136:12-19 (Jan. 3) 1948.

place within one hour after administration; and the genitalia, with the exception of the testis, demonstrate marked development. Systemically, there is retention of sodium chloride, nitrogen, and water; muscular development and vigor are markedly increased. The secondary sexual hair grows rapidly, the beard becoming stiffer within a few weeks, and the axillary and pubic hair increase in coarseness. In many patients acne appears after several weeks and the hair and skin appear more oily. The vocal pitch of the eunuchoid approaches that of the mature normal man. The testes do not assume normal function, but there is an increase in the secretions of the prostate and seminal vesicles; in fact, the amount of semen may be a rough index of the therapeutic response to androgen therapy. Since testosterone is essentially a form of substitution therapy, retrogressive changes occur when therapy is stopped.

Efficacious forms of androgenic hormone are testosterone propionate and methyl testosterone. Testosterone propionate is administered intramuscularly in a daily dose of 20-25 mg., while methyl testosterone is given orally in a daily dose of 50-100 mg. Deanesly and Parkes[4] demonstrated that subcutaneous implantation of testosterone in the form of compressed pellets is economical, requires infrequent replacement, and affords a more prolonged and even stimulation than do other methods.

Infertility

Recently great interest and attention have been centered on the problem of infertility or sterility in the male. Methods have been developed for determining obvious abnormalities in the ejaculate of an individual. Essentially these procedures involve a study of the morphology, motility, and number of spermatozoa. If the examination reveals deviations from the normal, further investigations are instituted.

Complete absence or a persistently low count of spermatozoa necessitates excision of tissue from both testes for biopsy, in order to determine whether or not spermatozoa are being produced in a normal manner in the seminiferous tubules of the testis. If large numbers of mature spermatozoa are present and none are found in the ejaculate, then there must be an obstruction of the efferent seminal passages—the most common locations being the vas deferens and the lower portions of the epididymis. Treatment for this type of abnormality involves such surgical procedures as vaso-epididymostomy, vaso-orchidostomy, and catherization of the ejaculatory ducts. If biopsy reveals complete degeneration of the germinal epithelium associated with hyalinization or marked fibroblastic proliferation, then the situation is hopeless and no further procedures or therapeutic measures are advised.

Biopsy may demonstrate defective spermatogenesis—for example, spermatic cells progressing only to the spermatid stage, or germinal epithelium arrested at an early stage of spermatogenesis. Defective spermatogenesis may be due to any one or combination of ten or more etiologic factors. Briefly, they are heredity, nutrition, temperature, infections, neoplasms, circulation, irradiation, pressure, constitutional states, and endocrines. In this discussion only the endocrine factor in sterility will be considered.

As has been previously stated, a delicate reciprocal relationship exists between the anterior lobe of the pituitary gland and the testis. Hypofunction of the pituitary will lead to diminished activity and atrophy of the gonads. Hypoactivity of the gonads in turn will result in increased secretions of the gonadotropic principles of the pituitary. Thus, it is conceivable that mild hypofunction of the pituitary is the etiologic factor in some of the cases of infertility; this postulation has been supported by well authenticated reports of improvement following therapy with gonadotropins. The dosage of the gonadotropins to be used will not be given, since neither the precise indications for gonadotropic therapy nor the exact dosage has yet been established. In actual practice, hormone therapy is a measure of last resort and is administered only in cases where the patient is willing to try any form of therapy which offers even a remote chance of benefit.

The thyroid gland plays an obscure role in relation to the testis. It has been demonstrated that hypofunction of the thyroid is accompanied by a marked decrease in libido. Removal of the thyroid in the rat retards spermatogenesis. The use of thyroid in bar-

4. Deanesly, R. and Parkes, A. S.: Factors Influencing the Effectiveness of Administered Hormones. Proc. Roy. Soc., London, s.B., 124:279-298 (Dec. 7) 1937.

ren women having a subnormal basal metabolic rate has resulted in a substantial number of pregnancies. On the basis of this meager evidence, thyroid might well be administered to infertile males who demonstrate a low basal metabolic rate.

The value of testosterone in stimulating spermatogenesis is questionable in the light of present knowledge. Heckel[5] and McCullagh[6] have shown that large doses of testosterone depress spermatogenesis, while Rubinstein[7] and Hurxthal[3] have observed stimulation of spermatogenesis with moderate doses of testosterone in certain cases of hypogenitalism. The use of testosterone, therefore, in the treatment of male sterility at the present seems to be based upon tenuous evidence.

The male climacteric

The syndrome termed the male climacteric has aroused the interest of both physicians and laymen in recent years. Heller and Myers[8] have demonstrated that it is a definite entity and, because of its relatively rare occurrence, a pathologic entity rather than a physiologic one, as it is in the case of females. They have treated the disease successfully by administering androgenic hormones.

Symptomatically the patients complain of nervousness, fatigability, insomnia, decreased erotic urge, and sexual impotence; occasionally they suffer vasomotor disturbances in the nature of hot flashes. It should be noted, however, that these symptoms often occur in men who are known to possess active sexual vigor but who are suffering from fatigue, anxiety, or psychoneurosis. Moreover, modern surgeons have observed that men who are castrated for the treatment of prostatic cancer rarely exhibit the symptoms of nervousness, fatigability, and insomnia. Indeed, castration among these individuals often appears to have somewhat the opposite effect—a fact which prompted Bumpus to comment that the procedure not only controls cancer, but changes many oldsters who have developed erascible dispositions from "roaring lions to gentle lions."

It is evident that the male climacteric is an uncommon disease and that the majority of men who have complaints simulating this entity probably are suffering from fatigue, psychic disturbances, or malnutrition. The differential diagnosis is a matter of prime importance, since androgen therapy is expensive and can be definitely harmful when not specifically indicated. Heller and Myers[8] have demonstrated, by testicular biopsy and urine gonadotropic assays, that dysfunction of the testes is the etiologic factor in the production of the male climacteric. In true cases of the male climacteric testosterone therapy produces a marked increase in the titer of the urinary gonadotropins and marked improvement in the patient. Withdrawal of androgenic therapy is followed by a return of symptoms. These characteristics seem to differentiate between psychoneurosis and the male climacteric.

The vasomotor disturbances which characterize the climacteric in women are usually lacking in the syndrome of the male climacteric, although hot flashes often occur in men following castration. These symptoms depend upon estrogen deprivation rather than on the absence or diminution of male hormone secretion, and symptomatic relief may be obtained by the administration of estrogenic hormones.

Carcinoma of the Prostate

A contraindication to androgenic therapy in the male climacteric is the presence of carcinoma of the prostate. Carcinoma of the prostate occurs in approximately 13 per cent of all men over 50 years of age in the United States, and is the cause of death in about 5 per cent. The palliative or suppressive endocrine treatment of prostatic cancers which cannot be removed by radical surgery commenced in 1941, following the epoch-making discoveries of Charles Huggins[9], who in that year demonstrated a functional relationship between this disease and certain hormones. Since that time physicians have treated patients suffering from carcinoma of the prostate by the administration of estrogenic hormones and by surgical castration. The series of cases that

5. Heckel, J. and Steinmetz, C. R.: Effect of Testosterone Propionate upon Seminal Fluid in Men, J. Urol. 45:118-123 (Jan.) 1941.
6. McCullagh, E. P. and McGurl, F. J.: Further Observations on Clinical Use of Testosterone Propionate, J. Urol. 42: 1265-1273 (Dec.) 1939.
7. Rubinstein, H. S. and Kurland, A. A.: Effect of Testosterone Propionate on Spermatogenesis in Human, South. M. J. 32:499-503 (May) 1939.
8. Heller, C. G. and Myers, G. B.: The Male Climacteric, Its Symptomatology, Diagnosis and Treatment, J.A.M.A. 126:172-477 (Oct. 21) 1944.
9. Huggins, C. and Hodges, C. V.: The Effect of Castration, of Estrogen, and of Androgen Injection on Serum Phosphatases in Metastatic Carcinoma of the Prostate, Cancer Research 1:293-297 (April) 1941.

are being reported currently from many clinics will doubtless provide a means for final evaluation of the methods that are being employed. Spectacular regression of the primary neoplasm has been observed in many of the patients, and, in some instances, have disappeared completely; but some of the patients have shown improvement of short duration only, and a few have apparently derived no benefit whatever from the endocrine modifications that have been employed. Some observers have suggested that carcinogenic activity in some cases might even be accelerated by the altered hormonal status.

It appears evident that a critical evaluation of endocrine therapy must take into consideration not only the spectacular remissions but also the failures, and must demonstrate as well whether the change in hormonal status produces any instances of adverse response. Such a critical evaluation must have control series of cases not treated by the newer methods to serve as a base line for comparative study. There are few such series reported in the literature, and those that are available are lacking in many of the statistical details essential to critical comparative analysis.

Follow-up study on 795 cases

We have recently made a follow-up study on 795 cases of prostatic carcinoma that were diagnosed and treated in the University of Michigan Hospital between the years 1925 and 1940, inclusive. All but 12 of the 795 patients have been followed by our survey; thus, data are available to us on 98½ per cent of the entire series of cases. Seven hundred and thirty-seven of the patients have been reported dead; 605 died of prostatic cancer, while 60 died following operations and 67 died of other causes—29 of cardiovascular disease. Five of the patients died of unknown causes.

The average survival time of the entire group was 21.2 months, the extremes being less than one month and fifteen years. The influence of metastases on the periods of survival is of interest. Four hundred and seventy-five of the patients had no evidence of metastasis at the time of diagnosis, and in these the average survival time was nearly two years, the extremes being less than one month and fifteen years. There were 260 cases with metastases at the time of diagnosis; the average survival of these patients was seventeen months, the extremes being one month and 14 years, 8 months.

At the present time our two closed series of patients who are being treated by endocrine therapy (orchiectomy or stilbestrol) have been followed for approximately five and a half years, and the survival rates have recently been tabulated for comparison (table 1).

Table 1
Survival Rates to July, 1947 (Closed Series)

	Orchiectomy Series (75 cases)	Stilbestrol Series (50 cases)
Alive and symptom free	22.7%	18.0%
Dead or having recurrence of symptoms	77.3%	82%

These data suggest that the overall survival rates in the two series are approximately the same; and they demonstrate that neither form of therapy offers assurance of prolonged remission—a fact that should be borne in mind in determining the most suitable time to inaugurate endocrine therapy. Added information on the latter point is afforded by the survival data (table 2) on the patients who had cancer without metastases at the time treatment was initiated.

Table 2
Survival Rates—Patients without Metastases (Closed Series)

	Orchiectomy Series (45 cases)	Stilbestrol Series (33 cases)
Alive and symptom free	29%	27.2%
Dead or having recurrence of symptoms	71%	72.8%

It is evident that neither form of therapy prevents metastases or advance of the disease, and reason would seem to dictate that endocrine therapy should be regarded as a palliative measure only, and for that reason should be employed only in the advanced stages of the disease.

Estrogen therapy vs. orchiectomy

Many questions have arisen concerning the relative merits of the two methods of endocrine therapy that are under discussion. Huggins has steadfastly contended that castration is complete and that its effects are continuous; other observers have favored estrogen therapy, being of the opinion that stilbestrol neutralizes not only the testicular hormone, but also other hormones which might stimulate the growth of the tumor.

One obvious and practical disadvantage of estrogen therapy is the ever-present human attribute of forgetfulness and neglect. One fifth of the patients in our estrogen series forgot or failed to take their pills regularly; and at least two of the patients stopped taking the hormone altogether, after having obtained a remission, in the belief that the cancer had been cured! Another argument for castration is that some of the patients who failed to respond satisfactorily to estrogen therapy have had remission following castration, while none of the castration failures have been improved by estrogen therapy.

Additional evidence of interest in the comparison of the two methods of endocrine therapy is afforded by the survival data on patients who had demonstrable metastases at the time treatment was begun (table 3).

Table 3

Survival Rates of Patients with Metastases (Closed Series)

	Orchiectomy Series (30 cases)	Stilbestrol Series (17 cases)
Alive and symptom free	13.3%	0%
Dead or having recurrence of symptoms	86.6%	100%

From these statistics it would appear that orchiectomy is more effective than estrogen therapy as a palliative measure in patients with metastasis. However, when the data are subjected to statistical analysis (chi-square formula and Yates correction), it is found that the differences between the orchiectomy series and the stilbestrol series are not statistically significant at the 5 per cent level in either table. This statement means that such differences might be expected to arise by chance more often than five times in a hundred, and we can, therefore, make no statistical statement regarding the superiority of one treatment over the other, other factors being equal. Critical analysis of larger series of cases over longer periods of time is necessary before final evaluations can be made, but the present series permit the inference that castration provides a better clinical response than does estrogen therapy alone.

Conclusion

In this brief discussion an attempt has been made to point out not only conditions in which hormones may be usefully employed but also some of the situations in which hormone therapy has no demonstrated value. It is apparent that precise indications for hormone therapy in urologic practice are few at the present time. Undoubtedly, future research will reveal additional disease syndromes which can be treated by endocrine therapy.

CLINICAL MANIFESTATIONS OF GLIOBLASTOMA MULTIFORME

A Review of Fifty Cases

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DURHAM

The difficulties encountered in the differential diagnosis of brain tumor and other varieties of intracranial disease have long been a favorite topic for discussion. Slowly growing tumors, either benign (meningioma, acoustic neuroma) or malignant (astrocytoma), may remain undetected for comparatively long periods of time, but ultimately may develop fairly characteristic clinical signs. More malignant and rapidly developing intracranial neoplasms (glioblastoma, astroblastoma), on the other hand, may create so few or such diverse symptoms that clinical identification may be impossible until ventriculography and tissue study are done. Certain brain tumors are apt to develop in late adult life, and may be confused with the cerebral manifestations of other diseases which may appear in the same period—arteriosclerosis, hypertension, or presenile degeneration. Hastings[1], who reviewed 117 autopsies on patients with brain tumor, found that 25 cases incorrectly diagnosed antemortem were in individuals over 40 years of age. Retrospect in cases of this sort, however, often brings out clues which might have pointed suspicion in the proper direction, but which were overshadowed by more prominent features in the clinical development.

That our own assurance can mislead us when the diagnosis seems clear, and that unobtrusive but significant clinical features

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1. Hastings, D. W.: Difficulties in Differential Diagnosis of Brain Tumor in Older Age Groups, J. Nerv. and Ment. Dis. 89:44-51 (Jan.) 1939.

can slip by unnoticed are demonstrated in the following cases:

Case Reports

Case 1

A 43-year-old lawyer, previously asymptomatic, was having lunch in a restaurant seven weeks before admission to Duke Hospital, when he suddenly appeared dazed, complained of feeling sick, and rushed to a rest room. There he vomited on the floor and was found soon afterwards in a series of convulsions. Hospitalized promptly, he was found to have grossly bloody spinal fluid. Improvement was gradual through a prolonged delirium into consciousness marked by depression, anxiety, and occasional feelings of unreality. Intermittent retro-orbital and occipital headaches improved, but he occasionally noted a transitory, unexplained, and disagreeable odor. On the recommendation of a well-known psychiatrist, the patient was admitted to the neuropsychiatric service of Duke Hospital for treatment of "depression" following "brain hemorrhage."

Neurologic studies during the next four weeks showed little except anisocoria and an occasionally equivocal left plantar reflex. Examinations by an ophthalmologist on two occasions were normal. Electroencephalography demonstrated low amplitude waves with flattening in the right parieto-occipital region, thought to be "similar to records associated with vascular disorders, such as arterial aneurysm and/or thrombosis." Depressive symptoms improved with psychotherapy, but intermittent headaches, olfactory experiences, and feelings of unreality persisted. Arteriographic studies were planned in search of congenital intracranial aneurysm.

Suddenly, four weeks after admission, the patient complained of excruciating right occipital headache radiating into the neck, and lapsed into stupor. Pronounced meningismus appeared, together with left homonymous hemianopia and mild left hemiparesis. The spinal fluid, which was under normal pressure, contained 3 red cells and 3 mononuclear cells per cubic millimeter. Total proteins were 46 mg. per 100 cc. The findings at lumbar puncture three days later were essentially normal. After four days in a critical condition, the patient expired in a state of peripheral circulatory collapse and respiratory failure.

The final clinical diagnosis was: "Thrombosis of the right posterior cerebral artery associated with congenital aneurysm. History of subarachnoid hemorrhage. Death possibly associated with extension of thrombosis to basilar artery."

At autopsy, a large invasive tumor of the glioblastoma group was found deep in the right temporo-occipital lobe. Extensive necrosis, cystic degeneration, and hemorrhagic extravasation were evident.

Case 2

A 49-year-old housewife was brought to Duke Hospital in semicoma two weeks before death. Following three convulsions two months previously, she had lapsed into a stuporous state, complaining of soreness and aching in the back of the head and neck. Pneumoencephalograms performed within the next week were said to have been normal, but mental cloudiness continued, with deepening stupor one week prior to admission.

Neurologically, little was found except marked lethargy alternating with deep stupor, photophobia, generally hyperactive tendon reflexes, and equivocal plantar responses. At lumbar puncture, the spinal fluid was under slightly increased pressure and contained 19 mononuclear cells per cubic millimeter and 93 mg. of protein per 100 cc. A second puncture three days later disclosed fluid under normal pressure but containing 322 red cells per cubic millimeter and showing a positive benzidine reaction after removal of sediment. Electroencephalography demonstrated enlarged, slow waves over all regions without evidence of localization. Pulmonary congestion appeared, together with terminal leukocytosis, and the patient died twelve days after hospitalization in a state of progressive circulatory collapse.

The final clinical diagnosis was: "Epidemic encephalitis. Questionable brain tumor."

At autopsy, a large cystic and necrotic glioblastoma multiforme was found invading the diencephalon and the entire left cerebral hemisphere. The tumor was in contact with the posterior horn of the left lateral ventricle, and in several places seemed to occur in isolated masses suggesting a metastatic distribution.

Our experience in case 1 was corroborated by another case wherein symptoms of cerebral and subarachnoid hemorrhage were associated with more definite evidence for brain tumor:

Case 3

A 58-year-old laborer, complaining of intermittent pain in the back of the head and neck for two months, rapidly developed right-sided weakness and inability to speak four months before admission to Duke Hospital. After gradual improvement for fourteen weeks, he suffered a sudden relapse marked by severe headache, right-sided paralysis, and irrational behavior. He grew steadily worse, vomited occasionally, and one week before hospitalization exhibited weakness in the left leg and incontinence.

On examination the patient was semi-comatose, with normal blood pressure, slightly elevated temperature, and bradycardia. The neck was stiff and painful on attempted anteflexion. Neurologic study revealed bilateral papilledema, miotic pupils, and deviation of the eyes to the left. Other findings included spastic right hemiplegia, loss of pain reactions over the right side of the body, hyperactive tendon reflexes on the right, a grasp phenomenon in the left hand, and bilateral Babinski signs. The spinal fluid, which was under a pressure of 240 mm. of water, contained 21 red cells and 11 white cells (mostly mononuclear) per cubic milimeter, and total proteins of 286 mg. per 100 cc. The patient's condition was too critical for other studies. He lapsed into coma and died in general collapse on the fifth hospital day.

The final clinical diagnosis was "Brain tumor, possibly glioblastoma multiforme, with intracerebral hemorrhage and subarachnoid bleeding." Other diagnostic considerations included "cerebral and subarachnoid hemorrhage, possibly from intracranial aneurysm."

Autopsy demonstrated glioblastoma multiforme originating deep in the left cerebral hemisphere and extending by way of the centrum semiovale and corpus callosum into the right hemisphere. A tentorial pressure cone was associated with hemorrhagic infarction of both occipital lobes. Extensive tissue necrosis and subarachnoid hemorrhage were evident when the calvarium was opened.

Clinical and Pathologic Characteristics of Glioblastoma Multiforme

The clinical behavior of intracranial neoplasms of the glioblastoma group may vary

from highly characteristic to extremely perplexing, especially for those who must attempt differential diagnosis before neurosurgical assistance is available. Glioblastoma multiforme (spongioblastoma multiforme of Globus and Strauss), so called because of its pleomorphic histologic characteristics, appears customarily as a deep-seated cerebral tumor of late middle age, tending to invade extensively along fiber pathways such as the interlobar fasciculi and corpus callosum. (In childhood, it occurs rarely in the brain stem and cerebellum.)

It is composed of neuroglial elements, including spongioblasts, astroblasts, and abnormal astrocytes of all sorts. Numerous mitotic figures appear in the neuroglial cells, as well as in walls of blood vessels in areas of characteristic vascular proliferation. Patchy necrosis is common, with phagocytic response and glial replacement. Hemorrhagic extravasation into tumor substance occurs often; gross hemorrhage or cyst formation, less frequently. The invasive and destructive nature of the neoplasm frequently produces dramatic alterations in intracranial vascular dynamics (venous stasis, edema, arterial occlusion or rupture, internal hydrocephalus), so that the development of symptoms may be gradual or may be characterized by one or more apoplectic episodes simulating cerebrovascular disease. Glioblastomas and astrocytomas occur with approximately equal frequency and constitute about half of all tumors in the glioma series[2].

Cerebral Hemorrhage Due to Brain Tumor

Descriptions of the syndrome of spontaneous subarachnoid hemorrhage due to brain tumor are rare. Russel and Kershman[3] recorded 3 cases, in 2 of which occipital glioblastoma was found at autopsy following a clinical course not unlike that of our first case. They reviewed the literature prior to 1937, and found only one other reported instance[4] of this syndrome associated with a gliomatous tumor. Little has appeared on the subject since this time, except for a report by Porta[5] on spongioblastoma with recurrent subarachnoid hemorrhage, and one by Beriel and Devic[6], who discussed cases of brain tumor with the syndrome of meningeal hemorrhage.

References to symptoms suggesting subarachnoid bleeding in patients with angiomatous tumors are more frequent. Russel and Kershman concluded that brain tumor must be considered in the differential diagnosis of spontaneous subarachnoid hemorrhage, and indicated that a gradual onset of symptoms prior to ictus, and mental changes subsequently, should arouse additional suspicion. A mistaken diagnosis of intracranial aneurysm in such cases, however, could hardly be criticized. Furthermore, during the period of conservative management which follows intraventricular or subarachnoid hemorrhage in patients who survive[7], opportunity for further clinical observation is granted.

Leakage of small amounts of blood into the subarachnoid space without aggravation of tumor symptoms apparently is not uncommon. Globus and Sapirstein[8] reviewed 94 cases of brain tumor not subjected to surgical intervention, and demonstrated blood in the spinal fluid in 21 cases. They stated that this finding was not correlated with the type of tumor, with sudden aggravation of symptoms, or with evidence of gross hemorrhage into tumor. They pointed out that the seepage of blood was probably caused by alterations in the vessel walls and by the necrosis of tumor, both encouraging diapedesis or extravasation of blood elements into surrounding tissue. Gross hemorrhage into tumor was less frequent in their series[9] and

2. Elvidge, A., Penfield, W. and Cone, W.: The Gliomas of the Central Nervous System; A Study of 210 Verified Cases, A. Research Nerv. & Ment. Dis., Proc., (1935) 16: 107-181, 1937.
3. Russel, C. K. and Kershman, J.: Spontaneous Subarachnoid Haemorrhage and Brain Tumour, Canad. M. A. J. 36:568-577 (June) 1937.
4. Strauss, I., Globus, J. H. and Ginsburg, S. W.: Spontaneous Subarachnoid Hemorrhage; Its Relation to Aneurysms of Cerebral Blood Vessels, Arch. Neurol. & Psychiat. 27: 1080-1132 (May) 1932.
5. Porta, V.: Spongioblastoma cerebello-pontino con emorragia subaracnoidea spontanea recidivante, Arch. ital. di chir. 53:921-931, 1938.
6. Beriel and Devic, A.: Tumeurs cerebrales sous l'aspect clinique d'hemorragies meningees au cours d'une tumeur cerebrale, Lyon med. 161:47-48 (Jan. 9) 1938.
7. Hesser, F. H.: The Recognition and Management of Subarachnoid Hemorrhage, North Carolina M. J. 8:138-141 (March) 1947.
8. Globus, J. H. and Sapirstein, M.: Massive Hemorrhage into Brain Tumor; Its Significance and Probable Relationship to Rapidly Fatal Termination and Antecedent Trauma, J.A.M.A. 120:348-352 (Oct. 3) 1942.
9. Gross hemorrhage into tumor occurred in 9 of their 94 cases. One third of their cases were of the metastatic type. Spongioblastomas (glioblastomas) were next in frequency (24 cases); they accounted for gross hemorrhage in 4 of their 9 cases and shared equally with the metastatic variety as a cause for seepage of blood in 12 of the 21 cases in which subarachnoid bleeding occurred. This finding introduces the probability that metastatic tumor has to be given equal consideration with tumors of the glioblastoma group in the differential diagnosis of cerebrovascular disease.

was considered unlikely as a cause for sudden death.

Oldberg[10] likewise found gross hemorrhage into tumor uncommon in gliomas, though more prevalent in the rapidly growing varieties (occurring in 5.6 per cent of glioblastomas in his study of 832 gliomas in Cushing's series). Hemorrhage into brain tumor was accompanied by appropriate clinical symptoms in only 0.84 per cent of his large series—a finding which emphasizes the fact that acute aggravation of the symptoms of brain tumor may develop without hemorrhage. Oldberg considered such sudden changes more often due to vascular occlusion with rapid necrosis of tissue, to acute edema in and around the glioma (especially if it is cystic), or to mechanical intracerebral alterations and the sudden production of internal hydrocephalus.

Review of Fifty Cases

In an effort to analyze the clinical characteristics of these tumors more critically, 50 cases, diagnosed "glioblastoma multiforme" by operative biopsy (40 cases) or at autopsy (10 cases), were reviewed from the standpoint of symptom development, neurologic manifestations, and preoperative study and diagnosis. These cases constituted 12.5 per cent of approximately 400 intracranial tumors of all types diagnosed at Duke Hospital in the six-year period from 1941 through 1946. Initial uncertainty in diagnosis is made evident by the fact that 27, or more than half, of the patients were admitted to the hospital on services other than neurosurgical. All but 3 of these ultimately were transferred to the neurosurgical service for final diagnosis and treatment under the supervision of Drs. Woodhall and Odom, to whom I am indebted for the privilege of using their case material.

The age of the patients in this series ranged from 13 to 68, averaging 48 years. Males (average age 49) were affected about twice as frequently as females (average age 47).

Symptoms

The duration of symptoms before hospitalization varied from one week to three years, averaging twenty-two weeks. The onset of symptoms was insidious with gradual progression in 25 cases, rapid or apoplectic in 20, and gradual with sudden or episodic aggravation in 5. Intracranial vascular disease was suspected in about half the patients whose symptoms included sudden episodes.

Intermittent headaches, often accompanied by vomiting, were a prominent feature somewhere in the clinical course of all but two patients. The localization of the headache was chiefly frontal in about half the cases, and was divided equally between occipital and generalized in the remainder. Pain was lateralized in 10 cases and corresponded to the side of tumor location in 9 of these; otherwise, the distribution of headaches was of little or no localizing value.

Neurologic symptoms (unilateral weakness, aphasia, visual disturbance, olfactory hallucinations, jacksonian motor or sensory seizures) permitted some degree of anatomic localization in slightly more than half the group (56 per cent). Selective cerebral injury was suggested in another 16 per cent, but no localization whatsoever was possible in 28 per cent of the patients, in whom mental changes alone (irritable or irrational behavior, emotional flattening or depression, confusion, and gross sensorium defects) were evident. Some degree of mental aberration was frequent and was noted in all but 9 of the patients on first examination. Convulsions were absent in 27, or more than half the cases. They occurred as generalized tonic or tonic-clonic seizures in 11 cases and as focal seizures in 10 cases. Syncopal attacks alone appeared in 2 cases.

Signs

Neurologic signs of localizing value[11] were found in 37 cases, often as isolated manifestations such as homonymous hemianopia, unilateral lower facial weakness, or monoparesis. Signs were obscure in 10 cases, absent in 3. Palsies of the extraocular muscles associated with increased intracranial pressure were transitory and infrequent. Papilledema was absent in 8 cases, questionable or slight in 21, and moderate to severe in the remaining 21 cases. Unilateral predominance of papilledema was recorded in 15 cases. It provided no lateralizing information, being homolateral to tumor

10. Oldberg, E.: Hemorrhage into Gliomas; a Review of 832 Consecutive Verified Cases of Glioma, Arch. Neurol. & Psychiat. 30:1061-1073 (Nov.) 1933.

11. Objective disturbances alone were considered, since many patients cooperated too poorly for sensory examination.

location in 8 cases and contralateral in the rest. Meningismus, evidenced by painful rigidity on attempted passive anteflexion of the neck or by Kernig's sign, was pronounced in 8 cases and questionable or slight in 9 cases. It was absent in 33, or two thirds, of the patients, often in those showing marked neurologic dysfunction and papilledema.

Blood pressure was moderately elevated in 4 patients and definitely above normal in 2 others, with values as high as 200 systolic and 100 diastolic. Although symptoms might have been compatible with hypertensive encephalopathy in these individuals, brain tumor was suggested clinically and diagnosed neurosurgically in all after careful consideration of the history and clinical data.

Accessory clinical findings

Routine laboratory studies were not remarkable. Leukocytosis was present in 16 cases, the count ranging as high as 19,000 in one patient suspected of brain abscess. Serologic tests for syphilis were negative.

Preoperative lumbar puncture was performed in 21 patients. In 4 of these cases, the spinal fluid was examined shortly before admission to the hospital and was reported as being under "high pressure" in 3, all of whom exhibited marked papilledema at the initial examination, together with unquestionable signs of brain tumor. It is certain that lumbar puncture would have been avoided in these patients had the referring physicians been aware of the risks involved.

Reasonably complete studies on spinal fluid removed preoperatively during hospitalization were recorded in 15 cases (30 per cent), 12 of which were diagnostic problems with absent or questionable papilledema. In only one case were spinal fluid dynamics and constituency entirely normal, but the duration of symptoms in this instance was brief (two weeks). Initial pressures (with the patient in the lateral recumbent position) ranged from 120 to 520 mm. (average 247 mm.) of water. In one patient who was subjected to lumbar puncture on four occasions several days apart the pressure varied from 170 to 520 mm. of water[12].

The cellular content of the fluid was normal in 3 cases; a mononuclear pleocytosis (from 6 to 325 cells per cubic millimeter) was present in 6 cases, and a polymorphonuclear reaction (8 and 26 cells per cubic millimeter) in 2 cases. No investigation of the spinal fluid sediment for tumor cells was performed, although this is diagnostic[3] in some instances. The spinal fluid[13] in 8 of the 15 cases contained red blood cells ranging from 6 to 322 per cubic millimeter. It seemed likely that bloody spinal fluid occurred with significantly greater frequency in this series than would be expected from traumatic "bloody tap" and was, in most cases, incident to vascular changes in the tumor itself. The site of bleeding into the subarachnoid space was found at autopsy in one case; tumor presented on the surface of the brain in 2 cases; and the spinal fluid contained 100 to 322 red cells per cubic millimeter in 3 other cases. No xanthochromia was reported. The spinal fluid in one case, however, contained 1 red cell per cubic millimeter but gave a 3-plus benzidine reaction, suggesting earlier subarachnoid bleeding. (Symptoms had developed precipitously one week prior to lumbar puncture, with occipital headache, nausea, vomiting, and stiff neck.) Meningismus was present in 5 of the patients, but bore no relation to the degree of pleocytosis or to the presence of red cells in the spinal fluid.

The total protein content of the fluids ranged from 22 to 380 mg. per 100 cc. (average 115 mg. per 100 cc.), and was increased above normal in all but 3 cases; no parallel with the duration of symptoms or with the clinical course was evident. Pandy's reaction was negative in one case in which the total proteins were as high as 93 mg. per 100 cc.; but in general it conformed with the total protein values, being positive with total proteins as low as 66 mg. per 100 cc. Serologic and mastic tests were normal throughout.

Differential diagnosis

A preoperative diagnosis of "brain tumor, probably glioblastoma multiforme" was possible in 27 cases (54 per cent) before ventriculography. Brain tumor of another type and location was suspected in 3 cases (mesencephalic in 1 case and pituitary in 2 cases because of erosion of the sella turcica incident to increased intracranial pressure). In 15 cases (30 per cent) diagnostic possibilities

12. Ford and Murphy[13] have discussed this tendency of brain tumor to produce wide and rapid fluctuations of intracranial pressure.

13. Ford, F. R. and Murphy, E. L.: Increased Intracranial Pressure. A Clinical Analysis of the Causes and Characteristics of Several Types, Bull. Johns Hopkins Hosp. 64:369-398 (June) 1939.

other than brain tumor were under consideration singly or in combination as follows:

Intracranial vascular disease[14] was considered in a total of 13 cases, including cerebral arteriosclerosis with thrombosis (7 cases), subdural hematoma (4 cases), hypertensive encephalopathy (3 cases), congenital aneurysm (3 cases), subarachnoid hemorrhage (2 cases), intracerebral hemorrhage (1 case) and intraventricular hemorrhage (1 case). Encephalitis was considered in 3 cases, brain abscess in 2 cases, and cerebral degenerative disease in 2 others. Drug intoxication (bromides) obscured diagnosis in 2 cases. Several remarkable impressions appeared in 5 cases, including idiopathic convulsive disorder, sinusitis, unilateral alcoholic neuritis, psychoneurosis and hysteria.

Some 18, or 36 per cent, of the cases could be considered difficult diagnostic problems because clinical signs generally were little suggestive of brain tumor. Three of these were not accepted as brain tumor suspects until electroencephalography and ventriculography proved them to be. The first 2 cases reported above were not diagnosed correctly until autopsy, though both had been studied with reasonable care from a neurosurgical as well as a neurologic point of view.

Special studies

Special study techniques of some sort, including x-rays of the skull and chest, electroencephalograms, and spinal or ventricular pneumoencephalography, were employed in all except one patient, who succumbed too quickly (case 3).

Stereoscopic x-rays of the skull in lateral and frontal views were made preoperatively in 47 patients and demonstrated changes of some sort in 13, all of whom exhibited papilledema. Pressure from the tumor had caused a calcified pineal gland to shift position laterally or downward in 8, or about one sixth of the cases. This observation was particularly helpful diagnostically in 2 of the more difficult problems. Separation of sutures was noted in 4 cases, enlargement of the sella turcica and erosion of the clinoid processes in 2, and convolutional thinning in one case. Age or duration of symptoms could not be correlated with these findings, although the two youngest patients were included in the group. It is probable that tumor growth and cerebral damage were too rapid in most instances to produce pressure alterations in the skull. No evidence of tumor calcification was seen in any case.

Electroencephalography was of diagnostic and localizing value in 13, or about half, of the 28 cases in which it was done. Only 3 of these 13 cases, however, were among those in the group of 18 previously mentioned as "diagnostic problems." Brain tumor was suspected, but localization was erroneous in 7 of the 28 cases. "Paroxysmal cerebral dysrhythmia," suggesting idiopathic convulsive disorder, appeared in one case. In none of the cases, significantly, was the electroencephalogram considered "normal." It is of interest that the cerebral electroactivity in 3 of the 5 hypertensive patients was of the anoxic or dampened type over the affected area, such as is seen in cerebral infarction or subdural hematoma. Similar electroencephalographic changes were present in 3 other patients with normal blood pressure, indicating the predominantly vascular nature of the cerebral alteration produced by the tumor itself.

Pneumoencephalography, performed in all except the three cases presented above, gave confirmatory diagnostic information preoperatively in every instance. No attempt has been made to determine from the literature the frequency with which pneumoencephalography fails to give evidence of subsequently diagnosed glioblastoma, as in case 2. (Perhaps Dr. Odom, who has agreed to discuss the paper, can clarify this point and comment upon the operative and postoperative aspects of some of these cases.) Since the prognosis in glioblastoma multiforme is invariably poor, no attempt was made in many instances to prolong an already hopeless situation by radical and heroic tumor excision.

Subsequent course

The follow-up data available in most of the records were incomplete. Symptoms of recurrence had developed in 5 patients, who returned to the hospital four to ten months after the initial operation. One of these patients, with a two-month preoperative duration of symptoms, was operated upon three times in the next twenty-two months, mak-

14. Approximately 112 cases of intracranial vascular disorders of all varieties were diagnosed in Duke Hospital during the year 1946. Since our series covered a six-year period, the frequency of glioblastoma multiforme as the inciting cause for symptoms of intracranial vascular disease would have been about once in 53 cases.

ing a satisfactory response each time. In the 10 cases which came to autopsy, the duration of life from onset of symptoms averaged four months, ranging from one and a half to nine and a half months.

Factors in the Diagnosis of Glioblastoma Multiforme

Certain pitfalls in the differential diagnosis of malignant brain tumor from other varieties of intracranial diseases are evident from the foregoing data. These include: (1) age and the presence of arteriosclerosis and/or hypertension; (2) ictus suggesting cerebrovascular disease; (3) lack of localizing symptoms or signs; (4) temporary clinical improvement; (5) normal eyegrounds; (6) mental symptoms alone suggesting toxic, inflammatory, or degenerative cerebral disorder, and (7) overemphasis upon historic or other data to the exclusion of subsequent clinical developments—for example, previously "normal" pneumoencephalograms or a history of subarachnoid hemorrhage suggesting intracranial aneurysm.

Pertinent clinical features favoring a diagnosis of glioblastoma multiforme in our series were as follows: (1) illness beginning in the second three decades of life; (2) symptoms of short duration (twenty-two weeks), with episodic aggravation, in half the cases; (3) headache with vomiting in most instances; (4) mental disturbance in most cases, often rapid and early in appearance and later accompanied by neurologic symptoms in half the cases; (5) convulsions or syncope in about half the patients; (6) objective neurologic signs, ultimately, in about three fourths of the cases; (7) definite alterations in the cerebrospinal dynamics and constituency (pleocytosis, seepage of blood, increased protein content); (8) consistently abnormal electroencephalogram; and (9) not infrequent skull changes demonstrable by x-ray.

When confusion with intracranial vascular disease existed, suspicion of brain tumor was often aroused by the comparatively brief duration of symptoms and by the rapid appearance, persistence, and steady progression of mental change, sometimes episodic or suddenly illuminated by the appearance of neurologic symptoms and signs suggesting, but not clearly identified with, one of the recognizable cerebrovascular syndromes. In most cases of cerebrovascular disease, the clinical course is more protracted; the intellectual deficit is early, gradual, and characteristic—sometimes with pathologic emotionality—, and the neurologic alterations are better defined as cerebral artery syndromes. Furthermore, convulsions are less apt to occur, and electroencephalograms and studies of the spinal fluid in many cases may be normal.

Finally, if any doubt in diagnosis exists, it is better to err in the direction of looking for brain tumor than to consider sparing the patient the risk of pneumoencephalography. Contraindications to this procedure are few; opinion has been expressed that the demyelinizing encephalomyelopathies, such as Schilder's disease, may be aggravated thereby. Oldberg's investigations on glioma, however, have shown that even decompression and diagnostic tap are entirely justified when intracerebral hemorrhage and tumor are confused clinically[10]. Horrax[15], furthermore, cited 3 cases, clinically typical of cerebrovascular accident, which proved to be operable brain tumors following ventriculography. Certainly, there is no reason to disagree with Wilson[16] that brain tumor should always be suspected in any case of paralysis of cerebral type, even if the background and clinical findings suggest vascular disease.

Discussion

Dr. Guy L. Odom (Durham): The diagnosis of a brain tumor in the age group in which glioblastomas occur is a particularly important problem and, at times, an extremely difficult one. They occur in the so-called 'cancer age,' the older age group, in which also occur the vascular lesions which so commonly involve the brain. You may ask what difference it makes whether a patient has a vascular lesion or a malignant glioma. It makes a great deal of difference in some respects, especially from the standpoint of prognosis. At times malignant gliomas are located in parts of the brain which can be removed, thus affording the patient a year or several years of happy existence. Then, there are the benign tumors, which may be present for a number of years before they suddenly produce symptoms. The patient becomes comatose, or rapidly develops paralysis on one side or the other, and is thought to have a malignant tumor; operation, however, will show a benign meningioma, removal of which will permit the patient to live out his normal life expectancy. The reason for the sudden development of symptoms in these cases is that the brain can adjust itself very well to slowly increasing intracranial pressure or to a slowly growing mass, until there is an obstruction in the ventricular system. Such obstruction produces a very sudden change in

15. Horrax, G.: The Importance of Cerebral Air Studies in the Differentiation of Brain Tumor from Intracranial Vascular Disease, S. Clin. North America 16:1653-1662 (Dec.) 1936.
16. Wilson, R. B.: Multiple Gliomas of Brain Simulating Vascular Disease, J. M. A. Georgia 26:464-467 (Sept.) 1937.

the patient's condition and frequently makes one think of the possibility of a rapidly growing tumor.

I feel that every patient in whom there is any doubt about brain tumor should have the benefit of either a ventriculogram or a pneumoencephalogram. Frequently such studies will reveal a brain tumor in patients who have no complaints other than slight mental confusion or memory defect, no positive neurologic findings, normal x-rays of the skull, and normal pressure on lumbar puncture. One rule that can be definitely laid down is that any patient having convulsive seizures starting late in life should **always** have a pneumoencephalogram performed, even if the neurologic examination is negative.

A point I would like to bring up is the question of subarachnoid bleeding in cases of malignant gliomas. I wonder whether the first case Dr. Hesser reported really had a subarachnoid hemorrhage. Apparently the diagnosis is based on the fact that the patient had bloody spinal fluid when he was admitted to another hospital. If this is going to be published as a case of glioblastoma with subarachnoid hemorrhage, it would be wise to check back into the records and see whether the symptoms, clinical course, and subsequent lumbar punctures (if any were made) confirm the diagnosis.

Dr. Hesser: Two lumbar punctures were done and both confirmed the presence of subarachnoid hemorrhage.

Dr. Odom: I have always felt that subarachnoid hemorrhage is not as common with malignant tumors as some people feel. Vascular change is one of the characteristic findings of glioblastoma multiforme, and accounts for the sudden change in the patient's neurologic status; but actual, frank hemorrhage into the subarachnoid space in these cases is an extremely rare occurrence.

Dr. Graves: I would like to make a very short comment about one of the discussant's remarks—that is, in regard to convulsions starting late in life. I think that idiopathic epilepsy can begin at any age, although it is true that it usually begins earlier in life and the brain tumors usually start later. When a patient develops seizures after the age of 30, they are more apt to be due to brain tumors than to epilepsy; but I am quite sure that idiopathic epilepsy may occur at any age.

Dr. Odom: I did not want to leave the impression that all convulsive seizures occurring after 30 years of age are due to brain tumors. However, if a patient begins to have attacks after 30 and does not have a pneumoencephalogram, he has been mishandled. Every now and then a patient who has been having convulsive seizures for several years is admitted to the hospital comatose as an emergency. This past week we operated upon a patient who had had convulsive seizures for two and a half years. He was admitted to the hospital last week with marked papilledema and almost complete paralysis of the left side of the body. An extremely large tumor in the right temporal lobe was resected. If that patient had been admitted to the hospital two years ago or a year ago, and had had an encephalogram made, his postoperative course would not have been as critical. When the brain can no longer compensate for the increased intracranial pressure, and when changes occur in the midbrain, the operative prognosis is extremely poor.

Dr. Hesser: I thank Drs. Odom and Graves for their comments.

I would like to emphasize the point that patients with brain tumors are sometimes treated for long periods of time as cases of simple headache problem, or sinusitis. If the practitioner would examine the eyegrounds periodically in these cases, he would sometimes be able to make an earlier diagnosis.

PRIMARY CANCER OF THE LUNG

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The lung is the second or third most common site of primary cancer in man. Carcinoma of the lung is less common than cancer of the stomach, and, in some clinics, less common than cancer of the large bowel; in others, it occurs more frequently than carcinoma of the large bowel. For several years campaigns have been conducted to make the public and the profession familiar with the early symptoms of cancer. In the case of cancer of the lung the publicity has failed of its purpose. During the last fifteen years there has been only a slight decrease (from 9.9 months to 9 months) in the average interval between the onset of symptoms and hospital admission in more than 300 cases which I have reviewed.

It is debatable whether or not there has been an actual increase in cancer of the lung. It is universally agreed that more cases are being seen clinically and at autopsy. An increasing ratio of lung cancers to all other cancers has been reported by several observers. It is probable, however, that the increase is more apparent than real, and might well be explained on the basis of increased longevity, better diagnostic methods, greater familiarity of the pathologist with the lesion, and the classification as primary of tumors which formerly were believed to be metastatic or secondary.

Etiologic Factors

It should not be necessary to state that the cause of this type of cancer, as of all others, is unknown. Unfortunately, however, reports are appearing almost daily in the newspapers about the discovery of a cause or a cure for cancer. Millions of dollars are being spent for research on this subject, and we can hope for more information in the future.

Lung cancer occurs predominantly in patients over 40, but is occasionally seen in teen-age youngsters. For some unknown reason males are afflicted five or six times as frequently as females. This fact has been used by some as an argument that smoking has an irritating effect which is a factor in

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the production of lung cancer. Such reasoning has no foundation on either experimental or clinical evidence. The incidence of cancer in patients with truly irritating diseases of the bronchial tubes, such as bronchiectasis, has never been shown to be greater than in normal individuals. Many patients, both male and female, who have lung cancers have never smoked.

Symptoms

The first and most common symptom of cancer of the lung is an unexplained and persistent cough. The prompt and thorough investigation of such coughs would do more to ensure early diagnosis and prompt treatment than any other measure or measures now available. Many patients state that they "caught a cold" and that the resulting cough has persisted. It is expensive and time consuming to study all such patients properly; yet that is the only way that early diagnosis can be made in most cases. It is impossible to make any statement that would apply to all patients, but it seems wise to become suspicious of the possibility of cancer in any patient over 30 years of age who has previously been in good health, and who has a cough which persists more than three or four weeks.

Other symptoms are far less frequent, especially early in the course of the disease. The most common are hemoptysis, chest pain, and dyspnea, in that order of frequency. The average concept of lung cancer —which, unfortunately, has been reprinted from textbook to textbook—is that of far advanced, hopeless cancer. Cases presenting the picture of anemia, weight loss, profuse sputum, massive hemorrhages, chest pain, and neurologic or skeletal evidence of metastasis are hopeless, and the only reason for confirming the diagnosis is to satisfy one's curiosity. Nothing in the way of curative therapy can be sensibly considered.

Diagnosis

In recent years, mass roentgenologic surveys are revealing more and more unsuspected and silent shadows in the lung fields. If such abnormalities are properly evaluated and repeated examinations done, more early cancers will be found. The attitude taken by some, of "waiting to see what will happen," may lose for the patient his only chance of a cure. One is perhaps justified in waiting three or four weeks before definitive action is taken. If the shadow does not regress after a short period of observation, however, and if other diagnostic procedures have been exhausted, then exploratory thoracotomy is justified. It is the silent, accidently discovered cancer that is usually the most amenable to treatment.

The only effective diagnostic measures are roentgenography, bronchoscopy, and the microscopic examination of stained bronchial secretions; finally, exploratory thoracotomy may be necessary. Such an operation should become less and less frequent, just as exploratory laparotomy has. Both performances are confessions of ignorance and are often not very gratifying to either the patient or the doctor. The value of the other diagnostic procedures is in direct proportion to the ability of the individual performing them.

Roentgenography

The interpretation of x-ray films of the lung when cancer is present is not an easy matter. The position of the cancer may greatly alter the picture. Malignant pulmonary lesions vary from a small growth in a major bronchus which presents no abnormality to a large, thick-walled cavity replacing the greater part of a lobe and containing a fluid level. A cancer beneath the visceral pleura may give rise to pleural fluid which prevents the tumor from being visualized on the film. Atelectasis, bronchiectasis, and obstructive emphysema may all result from cancer. Rib erosion with symptoms related to the brachial plexus and sympathetic system, circumscribed hilar shadows, and paradoxical diaphragmatic action resulting from phrenic nerve paralysis, may all be produced by lung cancer. A cancer located in the mediastinal aspect of the left lower lobe may be entirely obscured by the heart shadow if only a conventional posterior-anterior view is taken. Lateral and oblique views may be necessary to visualize it.

Bronchoscopy

The bronchoscope should be considered as an adjunct to roentgenography rather than a substitute for it. It should be recalled that the bronchoscope is too large to enter the medium and finer subdivisions of the bronchial tree, where the x-ray film is most valuable. Exact diagnosis, of course, is possible only when the bronchoscopist can secure a

piece of the tumor for microscopic examination. Since the majority of lung cancers are bronchogenic and are located in fairly large bronchi, most of them—45 to 78 per cent—can be diagnosed accurately

Whether or not tissue is removed, the expert performance of bronchoscopy often yields useful information which demands continued efforts at diagnosis. Tracheal or bronchial fixation, widening of the carina, or pus or blood visualized beyond the tip of the bronchoscope is strongly suggestive of cancer, even in the presence of a negative x-ray film. Finally, if the cancer is visualized, its exact position—a knowledge of which may be all important if removal is contemplated—can best be determined by the bronchoscopist.

The Papanicolaou technique

For many years efforts have been made to diagnose lung cancer by the microscopic examination of stained smears of sputum or pleural fluid. English workers have been especially diligent. The results of such examinations have been discouraging, and in most clinics they have been abandoned. Interest in examining bronchial secretions or washings obtained through the bronchoscope has recently been revived by the work of Papanicolaou. The finding of cancer cells in the vaginal or cervical secretions has aided in the earlier diagnosis of cancer of the uterine cervix or body. The same staining technique or another employing hematoxylin and eosin has been applied to bronchial secretions with apparently increasing success.

As with the vaginal smears, false positive or false negative results have been obtained in a small percentage of the examinations. Most pathologists prefer more tissue for examination than is usually available in the secretions. They prefer to see the relationship of the abnormal to the normal. It seems, however, that a high degree of success is possible if the material is properly prepared and is painstakingly examined by a trained cytologist. The tumor beyond the tip of the bronchoscope may best be diagnosed by this means. On the other hand, certain cancers may remain in the submucosal layer of the bronchus and not "shed" cancer cells into the bronchial lumen until the growth has reached considerable size.

Exploratory thoracotomy

All too frequently diagnostic measures fail to give an answer and exploratory thoracotomy becomes necessary. Even with the chest open, it is often difficult to get a piece of tissue for frozen section. The bronchus may have to be opened or considerable normal lung traversed, with attendant troublesome bleeding, before an adequate specimen of tissue is obtained. If obliterative pleuritis is added to the other difficulties, it can be readily appreciated why exploratory thoracotomy should be used only as a last resort.

Other diagnostic measures are occasionally used, but usually are positive only in inoperable cancer. The removal of a metastatic nodule from a distant site or the direct aspiration of cancer cells from an intrathoracic mass may give the correct diagnosis, but is rarely of any additional value.

Treatment

It was not until 1933 that the first successful therapy was applied to lung cancer. The therapeutic procedures that have been tried most often are the roentgen ray, direct application of radium to accessible lesions, and surgical removal.

Roentgen therapy

Roentgen therapy has been used in more patients than all the other methods combined. No cure has ever been reported, even though massive doses have been used—in some cases, with the chest open and the tumor exposed. It is true that temporary improvement may follow roentgen therapy. Apparently bronchial obstruction may be partially overcome and bronchial drainage promoted. Thus an occasional patient will gain weight, his cough will be less disturbing, and the appearance of his chest film will improve. These changes are all fleeting, and the condition progresses to its inevitable end. In a series of patients treated by x-ray the survival time was only three to four months longer than in a series of untreated patients.

Endobronchial radium

Endobronchial radium application was given a thorough trial, especially in England. An apparatus was devised whereby radium could be held in place against the cancer in the bronchial wall without producing bronchial obstruction. This method allowed for the maximum, direct radiation.

Temporary improvement followed, but the cancer eventually proved fatal.

Pneumonectomy

Occasional attempts to remove totally the lung which was the site of cancer were all unsuccessful until 1933. In that year the first successful operation was performed on a physician, who, as late as May, 1947, appeared to be in good health and was conducting a busy practice. The operation is now being done by more and more surgeons. The mortality rate as well as the cure rate is improving, because of better anesthetic methods, the use of blood and blood substitutes, the availability of agents to combat infection, and—last, but not least— added experience and knowledge in maintaining relatively normal respiration during and after the operation. It can now be said that approximately 7 per cent of patients operated upon for lung cancer can be cured. That statement does not mean that 7 per cent of all patients who have lung cancer can be cured, because many of them are quite obviously beyond help when they are admitted to the hospital. Not all of those who are cured are able to carry on their occupation; an occasional patient becomes so short of breath that his activities are greatly restricted. Fotunately, however, the majority of them can engage in a gainful occupation.

Occasionally a palliative lobectomy or pneumonectomy is justified in a patient who is having recurring massive hemoptyses, or a persistent racking cough which prevents him from eating and sleeping. In such cases the operation merely makes the few remaining weeks or months of life less horrible.

Summary

1. Cancer of the lung is the second or third most common malignancy occurring in man, and the incidence appears to be increasing.

2. The most common early symptom is a persistent cough; any cough of more than three or four weeks' duration deserves a thorough investigation.

3. If the diagnosis cannot be made by roentgen and bronchoscopic studies, exploratory thoracotomy is justified.

4. The only hope of cure is afforded by pneumonectomy. The present rate of cure in patients on whom this operation is performed is approximately 7 per cent.

BETTER HEALTH—TODAY AND TOMORROW—THROUGH MEDICINE

WILBURT C. DAVISON, M.D.

DURHAM

The two following statements are frequently quoted: (1) The United States has the best medical care in the world, and (2) the rejection of 37.6 per cent of the Selective Service registrants indicates that our medical care is not what it should be. The conclusion to be drawn from these conflicting statements is that, regardless of how good our health standards may be, better medical care can and must be provided.

Factors in the Provision of Better Health

Six factors are involved in improving the health of our nation: (1) education of the public to seek good medical care, (2) location of physicians and hospitals, (3) distribution of the costs of medical service, (4) treatment of disease, (5) prevention of disease, and (6) research to discover better means for the treatment and prevention of disease.

Education of the public

This meeting is an effort by the North Carolina Hospital Association and the medical profession to acquaint the public with the necessity for good medical care. More and better medical and hospital facilities are needed, but it is equally important that the public be educated to seek and to utilize the present facilities and those to be created under the Good Health Program. Many people, especially among the poorer classes, do not realize that better medical care is necessary and do not know enough about available medical facilities. Inadequate medical care often is due to this factor of ignorance. A public awareness of the necessity for preventive, diagnostic, and therapeutic measures will enable the physicians, hospitals, and health departments of North Carolina to provide these measures, regardless of the poverty of the patient.

Syndicated medical articles in the newspapers have made remarkable progress in educating the public, but obviously they do

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not reach those who do not read the newspapers. School, radio, and billboard programs also are needed. If, through advertising, a public demand can be created for automobiles, electric refrigerators, certain brands of cigarettes, and patent and home medicines (which represent 14 per cent of the present medical costs), the people can be taught, by the same means, to seek adequate medical service. The law of supply and demand is still in operation. The public gets the product it demands, whether it be medical care or a nationally advertised variety of tooth paste. In many communities, however, such a demand must be created. The American Medical Association, the American Academy of Pediatrics, and county, state and federal health services might employ publicity experts to conduct advertising campaigns on the necessity for adequate medical care and on the medical facilities available. Dr. I. G. Greer has shown that adequate medical care is effective; only 1.4 per cent of those men who grew up in North Carolina orphanages were rejected by Selective Service, in contrast to 44.6 per cent for the state as a whole.

Distribution of medical services

There is a dearth of general practitioners, especially in rural areas, and efforts are being made by the North Carolina Medical Care Commission, the Good Health Association, the North Carolina Hospital Association, the Duke Endowment, and the medical schools to remedy maldistribution of medical services. Hospitals and physicians go together; neither can be separated from the other. The present program consists in building more rural hospitals and health centers, recruiting more keen rural medical students, and providing loan funds for a part of their education.

Distribution of the costs of medical care

Another great difficulty in the present situation is the uneven distribution of the costs of medical care. The public and the medical profession should eventually benefit from the gradual development of methods by which adequate medical services can be made available to all of the people, regardless of their ability to pay. The Medical Society of the State of North Carolina and the North Carolina Hospital Association are studying methods to implement this program. The Hospital Care Association and the Hospital Saving Association have provided voluntary medical and hospital prepayment plans, and the Duke Endowment, the state, and the counties pay part of the costs of hospitalization for the indigent.

Treatment of disease

Most people—and, I am sorry to say, many medical students and physicians — regard the treatment of disease as the most important factor in the improvement of health. I rarely see a child who is not receiving one of the new sulfonamide drugs, penicillin, or streptomycin. Frequently little or no previous effort has been made to discover the cause of the disease. It is now a common practice to give sulfonamides routinely for two days. If no improvement follows, penicillin is given. After two more unsuccessful days, the drug is changed to streptomycin. If the patient is not cured by the sixth day, he may be examined to determine the cause of his symptoms. I must admit that most patients recover with this type of blind treatment, but we should not practice medicine without first trying to find out what we are doing, or to diagnose the type of disease with which we are dealing.

Prevention of disease

Preventive medicine must also be increasingly taught and practiced. Whether the cost is borne by taxation, private fees, or local charity, prevention is the most important phase of medicine and should be carried out by private physicians as well as by health departments. "He who cures a disease may be the most skillful, but he who prevents it is the safest physician." Three fourths of the 250,000 deaths of American children which occur annually can and should be prevented. Twenty-one per cent of these deaths are due to curable diseases, while 56 per cent are caused by preventable conditions. Much has been accomplished in this field, and during the past fifty years the infant mortality rate in North Carolina, for example, has fallen from approximately 100 per 1,000 live births to 37.

The need for better prenatal, obstetric, and neonatal care is emphasized by the fact that more than half the deaths in this country among children under the age of 1 year occur during the first month of life. Improved maternity care and the hospitalization of mothers who need it can and must be

supplied through the cooperation of general practitioners, obstetricians, pediatricians, health officers, nurses, and hospitals. That such joint effort is efficacious has been demonstrated in Denver, where the number of infant deaths was reduced by better maternal and infant care from 178 per 1,000 live births to 15.

Immunization against smallpox, whooping cough, diphtheria, tetanus, typhoid and paratyphoid fevers will eradicate those diseases. From 1930 to 1938 diphtheria was responsible for 7 per cent of the admissions to the pediatric service of Duke Hospital. Since the state compulsory immunization law was passed, diphtheria is a rarity, though it is still a menace.

Rabies, malaria, poisoning, and automobile accidents can be reduced by proper precautions and the instruction of children. Cases of poisoning, especially those due to swallowing lye, are still too frequent. Adequate infant feeding and well balanced diets are necessary. As a result of the wider use of lactic acid milk and the sulfonamide drugs, summer diarrhea, especially dysentery, is disappearing. Last, but not least, mental hygiene is one of the most important phases of preventive medicine. Although not a large factor in mortality, mental health problems, because of the lives they wreck, often are as serious as those of physical health.

Research

Better health cannot be created without an alert medical profession. Better means for the treatment and prevention of disease must constantly be sought. Medical progress is possible only if every idea is first tried and tested by animal experiments to make sure that it is not harmful and involves no risk. Sound ideas are soon accepted and others rejected. The rapid acceptance of sulfonamides, penicillin, and streptomycin is proof that most medical men recognize excellence very quickly.

The medical research carried on during the war by the investigators of the National Research Council, the Committee on Medical Research, and the Office of Scientific Research and Development did as much to improve the nation's health as the atomic bomb did to end the war. Blood plasma, insect repellants, insecticides (DDT and others), chemotherapeutic agents, typhus and yellow fever vaccines, and new methods of treating burns, malaria (chloroquine), poisoning (BAL), tetanus, and tropical diseases are only a few of the developments that not only saved thousands of lives and prevented untold illness during the war, but will continue to provide better health for all of us.

Conclusion

Better health can and must be provided by: (1) education of the public to seek good medical care, (2) a better distribution of physicians, hospitals, and the cost of medical care, and (3) research to discover better means for the treatment and prevention of disease.

X-RAY EXAMINATION IN RUPTURE OF THE SPLEEN

C. L. Gray, M.D.

High Point

With the ever increasing incidence of highway and industrial accidents, the radiologist is being called upon more and more often to aid in the early diagnosis of acute traumatic disorders. In instances of abdominal trauma it is not always evident from the initial observations of the patient whether one is dealing with a severe intra-abdominal catastrophe or whether one can, with any degree of safety, observe the patient for a few hours while awaiting the development of signs pointing to injury of a hollow or solid viscus. Since so many possibilities in the differential diagnosis arise, one welcomes some means of aid in making a diagnosis, whether it be of a positive or negative nature.

The roentgenologist can be of great help to the surgeon or internist in diagnosing the presence of splenic rupture. No complicated or elaborate technical procedure or apparatus is necessary. A plain survey film of the abdomen, made with the patient in a level supine position, is all that is required. It is true, however, that the majority of these patients, when they are first seen in the hospital, are in varying degrees of shock, and may be poor candidates for x-ray examination.

Clinical Symptoms

The symptoms of a lacerated spleen are

Read before the Section on Radiology, Medical Society of the State of North Carolina, Virginia Beach, Virginia, May 13, 1947.

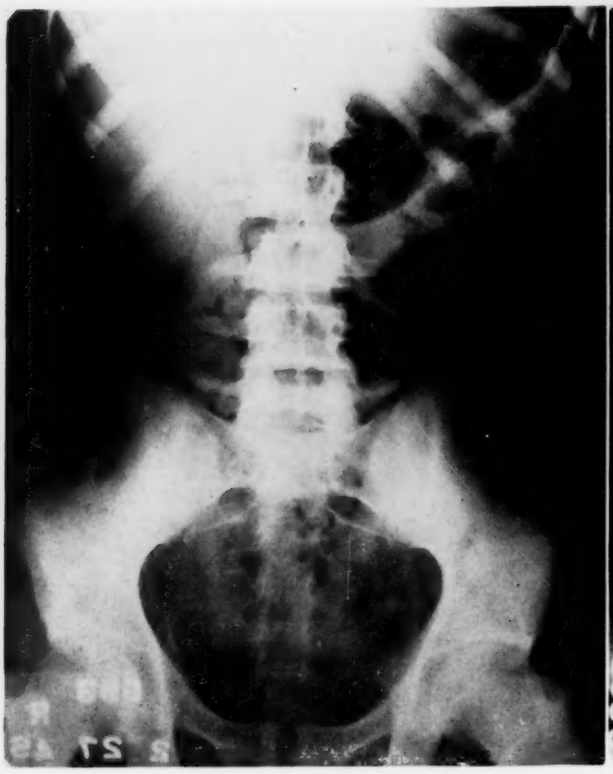

Fig. 1 (Case 1). Note the serrated greater curvature of the stomach, with padding and prominence of the gastric rugae. Two lacerations in the spleen were found at operation.

Fig. 2 (Case 2). The degree of dilatation of the stomach is fairly characteristic of splenic rupture. The upper third of the greater curvature is irregular in contour. A laceration of the spleen on its convex surface was found at operation.

those of intra-abdominal hemorrhage. Diaphragmatic irritation may cause the pain to radiate to the left scapula or shoulder. There may be a tender, ill-defined mass, rigidity of muscles, shifting dullness, and shock. Hemorrhage may be massive enough to result in early death, or it may be progressive, allowing the patient to walk perhaps half a mile, but producing exsanguination within twenty-four to forty-eight hours. Hemorrhage may also be of the delayed type characterized by repeated episodes of bleeding, usually accompanied by violent pain on exertion, at intervals of several days.

Roentgenologic Findings

In practically all normal persons, a plain film of the abdomen, *if* gas is present in the stomach, will show the normal gastric contour. In lacerations of the spleen there is obliteration of the splenic shadow, which may be due either to intracapsular splenic bleeding or to perisplenic hematoma. In addition, blood gravitates down the gastrosplenic ligament and infiltrates along the gastric wall, producing a jagged, serrated, saw-toothed appearance of the greater curvature of the stomach. The gastric deformity and extent of serration seem to be almost directly proportionate to the degree of hemorrhage.

Reflex gastric dilatation is usually associated with rupture of the spleen. The finding of a dilated stomach in addition to serration of the greater curvature is doubly significant. Occasionally the perisplenic bleeding results in tenting of the left leaflet of the diaphragm. This sign, when present, is another valuable diagnostic aid.

Case Reports

Case 1

A 17-year-old white boy injured in a train-automobile accident was brought into the hospital in a profound state of shock. Examination revealed multiple rib fractures on the right side, with collapse of the right lung and extensive emphysema of the soft tissues. Transfusions of whole blood and plasma were given, and he reacted from the shock. Further examination made it obvious that he was also suffering from some intra-abdominal injury. As the right side of the body seemed to have borne the brunt of the injury, it was natural to suspect a rupture of the liver, and this was the attending surgeon's impression.

A plain film of the abdomen (fig. 1) disclosed findings suggestive of splenic rupture, and the

Fig. 3 (Case 3). The increased space between the gas-filled cardia and the left leaflet of the diaphragm is suggestive of fluid or blood within this space. This picture was thought to represent laceration of the spleen, but operation disclosed a tremendous rupture of the liver, with almost total detachment.

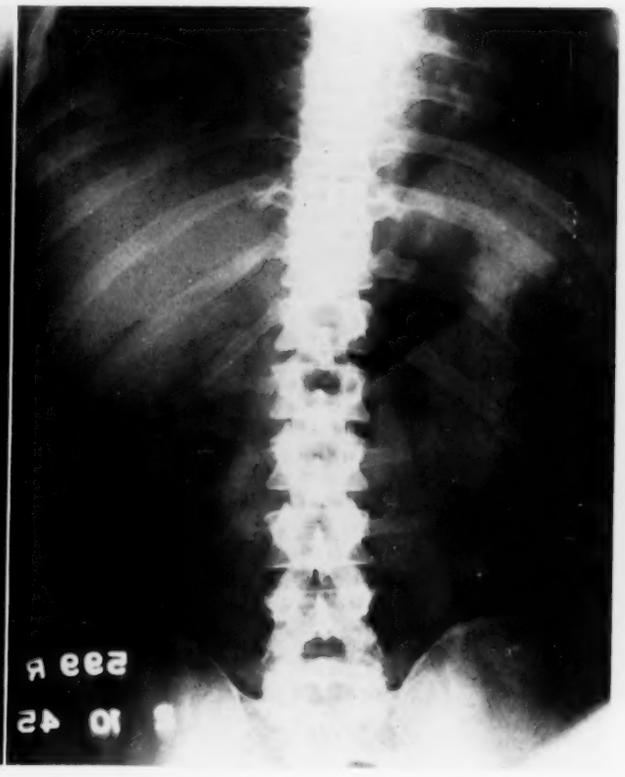

Fig. 4 (Case 4). The increased space between the leaflet of the diaphragm and the fundus of the stomach led to a mistaken diagnosis of splenic rupture. At operation the spleen was found to be normal. Note the fracture through the left tenth rib.

surgeon was influenced to make a high left rectus incision. Upon entering the peritoneal space, he encountered several hundred cubic centimeters of semi-clotted and fresh blood. Further exploration following aspiration disclosed a 2-inch laceration in the splenic hilum and another 1-inch tear in the adjacent lower pole. The blood had acted as a tamponade, and after aspiration bleeding became more profuse. Splenectomy was performed, and after a stormy postoperative course the patient recovered and is back at work today.

Case 2

A 22-year-old white man was brought into the hospital about seven hours after being injured in a motorcycle-automobile accident. Moderate shock was present, and there was marked abdominal muscle splinting. Attempted changes of position caused intense pain in the abdomen and left shoulder. A large contusion was noted in the left costovertebral area.

A chest x-ray showed no rib fractures or free air beneath the domes of the diaphragms, and no tenting of the diaphragm. A plain film of the abdomen (fig. 2) disclosed two avulsed lumbar transverse processes. The stomach was markedly dilated and gas filled, but showed no unusual displacement of the shadow. On the greater curvature was noted some jagged serration of the gastric wall. There was some padding of the visible rugal markings on the posterior wall of the gas-filled stomach.

These findings were reported to the surgeon, and a tentative roentgenologic diagnosis of splenic rupture was made. Exploration was carried out through a high left rectus incision, and about 800 cc. of dark blood was encountered. An irregular rent about 1 inch in length was found on the convex surface of the spleen. Splenectomy was performed without difficulty. Exploration of the other organs disclosed no other gross injury.

The patient's convalescence was complicated by a right subdiaphragmatic abscess, but he was discharged after several weeks, and has remained well since.

Case 3

A white woman, 35 years of age, was brought to the hospital in moderately severe shock following an automobile accident. She had received a terrific blow over the right upper abdominal quadrant from the steering wheel of the car she was driving. She complained of exquisite abdominal pain, and it was evident from physical examination that she had suffered some intra-abdominal injury. She had a board-like abdomen, with distention and signs of peritoneal irritation. She was treated for shock and observed for seven hours before an x-ray examination was ordered.

A plain film of the abdomen (fig. 3) showed considerable gaseous dilatation of the stomach, downward displacement of the stomach, and a serrated greater curvature. It was also noted that the liver shadow was displaced downward. The roentgen diagnosis was probable splenic rupture, with extensive perisplenic hemorrhage.

At exploratory operation approximately 1 liter of blood was found in the free peritoneal space. Fully half of the hemorrhage was diffused along the gastrosplenic ligament and enveloped the convexity of the stomach. After aspiration of the blood it was found that the spleen was not lacerated, but that

there was a tremendous tear in the posterior surface of the liver, with almost complete detachment. Attempts to suture the freely bleeding rupture were unsatisfactory. Finally, with the help of muscle implants, bleeding was controlled sufficiently to permit closure of the abdomen. The patient expired twenty-four hours later, however, despite the usual supportive measures.

As this case shows, bleeding from hepatic lacerations, if of sufficient magnitude, may well produce the x-ray findings characteristic of splenic rupture.

Case 4

While intoxicated, a 54-year-old white man fell on a stairway, striking the left lower posterior thorax. When first seen he was not in shock, and despite his self-induced analgesia, he continued to complain primarily of pain in the left upper anterior portion of the abdomen. This pain was occasionally severe in the left shoulder, and deep breathing was difficult.

A chest x-ray showed two non-depressed rib fractures in the lower left thorax posteriorly. A plain film of the abdomen (fig. 4) showed only a slight amount of gas in the stomach, but the gas bubble seemed to be well separated from the diaphragm, and from the splenic area. There was little or no serration of the greater curvature.

While these x-ray findings were not typical of a ruptured spleen, the man's clinical condition seemed to point more and more to an intra-abdominal injury of some type. He had a board-like abdomen, intense pain, excessive thirst, and apparently progressive shock. After about five hours of observation, his symptoms became exaggerated, and the attending surgeon performed an exploratory laparotomy. No intraperitoneal bleeding or rupture could be identified.

Twenty-four hours postoperatively a massive ecchymosis appeared over the entire left side of the thorax, having resulted from deep bleeding of the injured intercostal vessels at the sites of rib fracture.

Case 5

A 33-year-old white man pushed over a six-inch tree with a bulldozer. As the tree fell, he threw up his left arm to protect himself, and the tree pushed his arm and elbow into the left side of the lower thorax and upper abdomen, pinning him to his seat. He was able to free himself, and walked unassisted two or three hundred yards in order to summon help. He complained of pain in the left upper quadrant, together with weakness, nausea, and vomiting. It was some three or four hours before he was brought to the hospital, and on one occasion during this interval he voided grossly bloody urine.

Upon admission to the accident room of the hospital, he was noted to be in a condition of moderate shock. There was no abdominal distention and little or no splinting of the abdominal muscles. The most striking observation was the fact that the patient was unable to lie down and preferred to sit bolt upright with both thighs flexed. A moderate amount of pain was produced on deep pressure into the left upper quadrant. The white blood cell count on admission was 19,000. Examination of the urine showed gross blood in a voided specimen.

A survey roentgenogram of the abdomen was taken (fig. 5), and moderate gaseous dilatation of the stomach was observed, together with increase in the space between the fundus and the left concavity of the diaphragm. There was some serration of the greater curvature of the stomach, and slight displacement of the stomach shadow to the right.

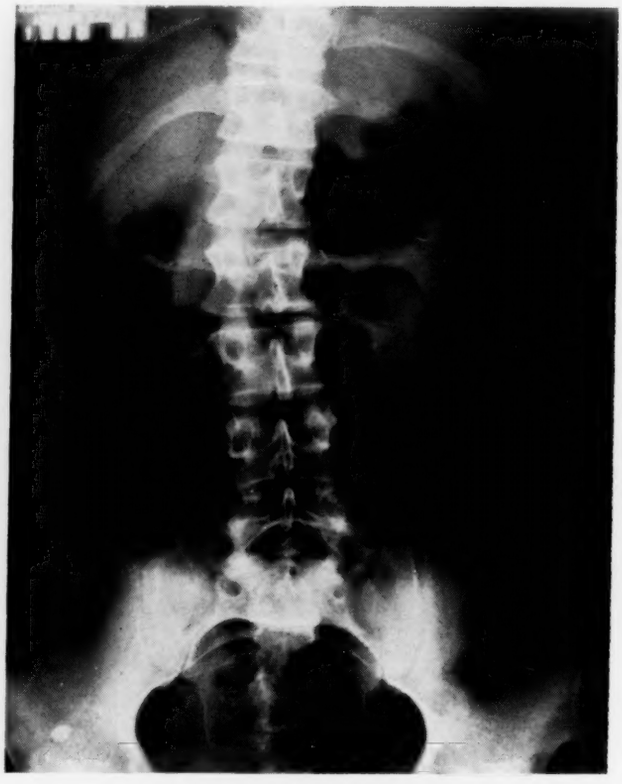

Fig. 5 (Case 5). This film shows all the findings helpful in the diagnosis of splenic laceration: increased width between the dilated and gas-filled cardia and the diaphragm; slight displacement of the stomach toward the right; and serration of the greater curvature. Operation revealed a large laceration in the splenic hilus.

The fact that the splenic shadow was absent was not considered of great significance, since this observation is noted at times in normal subjects.

Physical signs of peritoneal irritation were conspicuously lacking, and the patient was placed under constant observation. He remained in a state of moderate shock and continued to complain of severe pain in the upper abdomen. Since he failed to show any objective improvement in three or four hours, and since the roentgenographic changes suggested a rupture of the spleen, the surgeon elected to carry out an exploratory operation.

Upon entering the peritoneum about 2 or 3 liters of free and clotted blood was encountered. After evacuation of this blood and adequate packing, a long, irregular laceration was found through the lower pole of the spleen. Splenectomy was successfully carried out, and the patient made an uneventful recovery. The hematuria, which was apparently due to renal contusion, cleared within two days.

Conclusion

These cases appear to substantiate further the observations of Solis-Cohen and Levine[1], and also those of Rousseau and O'Neill[2], who have observed that the x-ray findings characteristic of splenic rupture

1. Solis-Cohen, L. and Levine, S.: Roentgen Diagnosis of Lacerated Spleen, Radiology 39:707-710 (Dec.) 1942.
2. O'Neill, J. F. and Rousseau, J. P.: Roentgenologic Examination of the Abdomen as an Aid in the Early Diagnosis of Splenic Injury, Ann. Surg. 121:111-119 (Jan.) 1945.

may also be produced by injury of some other viscus.

It should be pointed out again that no single procedure can take the place of diagnostic acumen. Roentgenologic examination, however, offers a simple accessory procedure which may be found helpful in cases of abdominal trauma.

TREATMENT OF PROLONGED LABOR DUE TO UTERINE INERTIA

JAMES F. DONNELLY, M.D.

WINSTON-SALEM

The importance of the proper management of prolonged labor is emphasized by the records of the North Carolina Maternal Welfare Committee[1]. These reveal that 10 of the first 100 maternal deaths reported to the committee were associated with prolonged labor. It is well known that this complication greatly increases the incidence of fetal and maternal morbidity and mortality. Another consideration which is often overlooked is that this type of labor, even when it does not produce permanent or temporary physical disability, may result in psychic trauma to the patient and her family. Long, difficult labor frequently causes the patient to develop an aversion to pregnancy which may be manifested later by disturbed family relations.

Statistics in respect to infant mortality are somewhat deceptive, since they do not reveal the subsequent course of the children born alive. Towne[2], in a review of 147 cases of prolonged labor, found that the fetal death rate was 7 per cent, as compared with 3 per cent following normal labors. Schreiber[3] has shown that infants who were apparently normal at birth following prolonged labor, but subsequently died of some disease unrelated to the birth injury, had many areas of gliosis in the brain (so-called devastation areas) which were due to birth trauma. The ultimate outcome in such cases of intracranial damage has not been ascertained.

It is important to define what is meant by normal labor. DeLee[4] defines labor as "that period of time from the onset of regular, rhythmical, uterine contractions to delivery of the baby." Careful scrutiny of the literature, however, reveals that the only concrete evidence of labor is progressive effacement and dilatation of the cervix; the absence of this sign indicates false or prodromal labor, which is treated in a totally different manner.

The average duration of normal labor varies from six to eighteen hours. When the labor exceeds twenty-four hours, it is considered prolonged[5]. The incidence of prolonged labor has been uniformly reported as approximately 4 per cent. Towne[2] reported an incidence of 4.11 per cent; Monroe[6], 4 per cent; and Siddall[7], 5 per cent; but Odell[8] reported an incidence of only 2.7 per cent in 1,500 cases.

There are four major causes of prolonged labor[5]:

1. Anomalies of the powers.
2. Anomalies of the passages.
3. Anomalies of the passenger.
4. Accidental complications such as toxemia, ruptured uterus, and intercurrent disease.

Unrecognized cephalopelvic disproportion occurred in only 6 per cent of Odell's series[8], and anomalies of the fetus and accidental complications are even less common. For this reason, this discussion will be restricted to the treatment of prolonged labor due to inertia (anomalies of the powers).

Prenatal Prophylaxis

Since the most important point in the management of any obstetric problem is anticipation, the preventive factor should be considered first. The principle of prevention or "watchful expectancy" (DeLee) should be applied to all aspects of pregnancy. The treatment of prolonged labor, therefore, begins during the prenatal period, since many

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From the Department of Obstetrics and Gynecology, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, North Carolina.

1. Lock, F. R. and Griffith, M. I.: Most Obstetrical Deaths Are Preventable, North Carolina M. J. 7:324-326 (July) 1946.
2. Towne, J. E.: Management of Prolonged Labor, M. Woman's J. 52:25-27 (March) 1945.
3. Schreiber, F.: Apnea of the Newborn and Associated Cerebral Injury, J.A.M.A. 111:1263-1269 (Oct. 1) 1938.
4. DeLee, J. B. and Greenhill, J. P.: Principles and Practice of Obstetrics, ed. 9, Philadelphia, W. B. Saunders Co., 1947.
5. Stander, H. J.: Textbook of Obstetrics, ed. 9, New York, D. Appleton-Century Co., 1945.
6. Monroe, L. T.: Prolonged Labor; Its Etiology and Management, North Carolina M. J. 3:297-303 (June) 1942.
7. Siddall, R. S.: Treatment of Prolonged Labor Due to Uterine Inertia, West. J. Surg. 50:581-587 (Nov.) 1942.
8. Odell, L. D., Randall, J. H., and Scott, G. W.: Prolonged Labor with Special Reference to Postpartum Hemorrhage, J.A.M.A. 133:735-739 (March 15) 1947.

of the causes of prolonged labor may be detected during this period and preparation made for the associated complications. Among the factors which may have a bearing on prolonged labor are bodily habitus, familial tendencies, physical activity, financial status, social status, parity, and age. No definite proof, however, has been established that any relationship exists between any of these factors and the length of labor.

Prenatal care should include a complete physical examination, basic laboratory studies, pelvic measurements, and a careful observation of the character of the pelvic soft tissues. Ideally, an x-ray of the chest and complete blood typing should be included. X-ray pelvimetry by the method of Caldwell, Moloy, and Swenson[9] is extremely valuable. A base line having been established, the physician's efforts should then be directed toward rendering the patient as nearly normal as possible. Subsequent visits should be made every three weeks up to the twenty-eighth week, then every two weeks until the last month; after that time, weekly visits are essential. Patients who have complications, of course, require more frequent examinations.

Diet

Although we do not fully understand the role of diet in pregnancy, it is clear that a well-nourished patient does better both in pregnancy and in labor. The daily nutritional requirements in normal pregnancy are as follows[10]:

1. Calories—2,500
2. Protein—85 to 100 Gm.
3. Carbohydrate—200 Gm.
4. Calcium—1.5 Gm.
5. Phosphorus—1.32 Gm.
6. Iron—15 mg.
7. Vitamin A—6,000 units
8. Thiamine chloride—2 to 5 mg.
9. Riboflavin—3 to 5 mg.
10. Nicotinic acid—50 to 100 mg.
11. Ascorbic acid—50 mg.
12. Vitamin D—600 units

It has been recommended that at least one whole-grain preparation in the form of pudding, cereal, or muffins be utilized daily and that three slices of bread, preferably of the whole-grain variety, be included in the diet. One quart of milk should be provided in addition to eggs, cheese, cottage cheese, and other dairy products. The diet should include two servings of fruit and two servings of fresh green vegetables daily. Meat or fish should be eaten at each meal, and liver at least once a week.

Efforts should be made to reduce the overweight patient by lowering the intake of calories to 1,200-1,500, while still maintaining the relatively high protein requirement of 85 to 100 Gm. daily. With any diet containing less than 1,200 calories, vitamins must be supplied in the concentrated forms, since these diets are deficient in vitamins. Some women require actual weight reduction during pregnancy, whereas others, who are underweight, should be allowed to gain more than the normal amount.

Other factors

Secondary anemia and other diseases must be corrected. The effect of tobacco and alcohol on pregnancy and labor is not yet clear[11]. A number of obstetricians feel that reduction of the chloride intake results in a shorter period of labor; evidence for this belief is lacking, however. The influence of hormones on the duration of labor is still under investigation. One of the most interesting, though poorly understood, factors affecting the character of labor is the psychic one. The pregnant patient who approaches labor with the understanding that it is a normal, physiologic process will do far better than the individual who is fearful or ignorant[8]. It therefore behooves the obstetrician to explain carefully and truthfully the physiology and clinical course of labor and delivery, advising the patient of her role.

Management of Labor

The attending physician should see the patient as soon as possible after the onset of labor. He should first make a rapid but thorough physical examination, followed by an abdominal and rectal examination to determine the stage of labor. When a long labor is anticipated or recognized, it is well to outline the management on a basis of four-hour periods. All these women should

9. Caldwell, W. E., Moloy, H. C., and Swenson, P .C.: The Use of the Roentgen Ray in Obstetrics; Roentgen Pelvimetry and Cephalometry, Am. J. Roentgenol. 41:305-316 (March) 1939.

10. Beecham, C.: Diet in Pregnancy; Practical Nutrition (reprinted from Philadelphia Medicine, 1941-1942).

11. Long, R., and Donnelly, J. F.: Effect of Tobacco on the Sexual Function of the Female (in preparation).

be hospitalized and rectal examinations should be restricted. If labor has been in progress for twenty-four hours, a sterile pelvic examination, x-ray pelvimetry, and consultation with an experienced obstetrician are essential. Other examinations of the abdomen, heart, lungs, temperature, pulse, respiration, blood pressure, and fetal heart rate must be carried out and recorded at frequent intervals.

Nutrition

The maintenance of adequate nutrition duing labor is of paramount importance. Gestation itself causes depletion of the glycogen stores in the liver[5]. In addition, water-soluble vitamins are not stored in the body and may reach low levels if not replaced daily. Patients who can take liquids orally should receive orange juice, 200 cc., alternating every two hours with similar amounts of water. The orange juice may be fortified with glucose, lactose, or other preparations. It is not wise to give larger amounts, for overloading the stomach tends to initiate vomiting.

In women who are vomiting, nutrition must be maintained parenterally. Two hundred to 500 cc. of a 10 per cent solution of glucose in water should be given by vein every four hours. Vitamins, if needed, may be added to this solution. A careful record of the intake and output should be kept. The urinary output should be maintained between 1,000 and 1,500 cc. daily. The bowel and bladder must be kept empty.

Chemotherapy

The proper use of chemotherapy in prolonged labor has reduced the incidence of dangerous infections in the mother, and also the high incidence of septicemia and pneumonia in the infant. It has been shown that both the sulfonamides and penicillin will cross the placental barrier and reach a therapeutic level in the fetus[12].

If the membranes have been ruptured for twenty-four hours or longer, prophylactic chemotherapy should be started. Of the sulfonamide drugs, sulfadiazine seems to be the safest. It should be used prophylactically in doses of 1 Gm. every eight hours. If definite infection exists, this dose should be given every four to six hours. Under the same circumstances, penicillin may be given prophylactically every three hours in a dose of 20,000 units. The therapeutic dose may be increased to as much as 100,000 units every three hours, depending on the severity of the infection and the offending organism. Streptomycin may be indicated in certain bacterial infections, but only as a last resort when the offending organism is resistant to other forms of therapy. In the event of any evidence of toxicity this drug should be discontinued at once, as it is extremely dangerous.

Sedation and analgesia

With uterine inertia, general exhaustion as well as local fatigue of the uterine musculature develops. It would appear, therefore, that some sedation is required in order to provide rest. The drug of choice should decrease uterine contractions as well as other physical activity, and provide mental relaxation. Opinions differ widely concerning the effect of various drugs on uterine contractility. Among the earliest analgesic drugs used in labor were opium and its derivatives. Murphy[13] has shown that morphine, in relatively large doses, reduces the frequency but not the intensity of uterine contractions. This drug is widely recommended for the treatment of uterine inertia in all the standard textbooks, and it will produce all three of the desired effects. Proper understanding of the pharmacology of this drug and of its use in obstetrics should render it safe for both the mother and child.

Pentobarbital is probably the analgesic drug most frequently used in obstetrics. In its usual doses, the effect of pentobarbital on uterine contractions is said to be insignificant[14]. Other barbituric acid derivatives behave in a similar manner. In anesthetic doses, however, such as would be obtained by intravenous administration, they may inhibit uterine contractions.

Antispasmodics

A number of drugs have been credited with having a relaxing effect on the cervix, thus expediting its dilatation. Among these are atropine, Syntropan, calcium salts, and

12. (a) Speert, H.: Placental Transmission of Sulfanilamide and Its Effects upon Fetus and Newborn, Bull. Johns Hopkins Hosp. 66:139-155 (March) 1940; (b) Woltz, J. H. E., and Zintel, H. A.: Transmission of Penicillin to Amniotic Fluid and Fetal Blood in Human, Am. J. Obst. & Gynec. 50:338-340 (Sept.) 1945.

13. Murphy, D.: Uterine Contractility in Pregnancy, Philadelphia, J. B. Lippincott Co., 1947.

14. Goodman, L. and Gilman, A.: The Pharmacological Basis of Therapeutics, New York, The Macmillan Co., 1941.

Demerol. Spinal, caudal, and local perineal block have also been said to relax the cervix and permit shorter labors, but clinical observations do not confirm this claim. Danforth's recent article on the histologic structure of the cervix[15] would indicate that the number of muscle fibers in the cervix is insufficient to support the theory that it can be relaxed by drugs. He states that *the cervix plays only a passive role in labor.* In other words, the cervix is dilated, but does not actively dilate or relax.

Stimulants

There is still some difference of opinion on the usefulness of posterior pituitary extract as a stimulant in prolonged labor. It is universally agreed that it is contraindicated in all cases of prolonged labor except those due to certain types of inertia[16]. In cases associated with relative cephalopelvic disproportion or abnormal mechanisms, Pituitrin stimulation is not considered safe.

Reid[17] has recently reported extremely favorable results with the use of Pituitrin in inert labor. Eastman[16] feels that the use of pituitary extract is warranted, provided that *rigid criteria* are observed. These are:

1. True primary inertia.
2. Actual labor, not false or prodromal labor.
3. No mechanical obstruction.
4. A live baby with a normal fetal heart rate.
5. Close observation of the patient.
6. Initial dose not exceeding ½ minim.

If these criteria are observed, it is obvious that very little pituitary extract will be used. It is contraindicated in the grande multipara, and should not be used in the treatment of secondary uterine inertia, since the uterus is already fatigued and should be rested rather than stimulated. The question of whether Pituitrin improves the prognosis for mother and baby in primary inertia remains to be answered. *It cannot be used safely in the home under any circumstances.*

15. Danforth, D. N.: The Fibrous Nature of the Human Cervix and Its Relation to the Isthmic Segment in Gravid and Nongravid Uteri, Am. J. Obst. & Gynec. 53:541-560 (April) 1947.
16. Eastman, N. J.: Pituitary Extract in Uterine Inertia: Is It Justifiable? Am. J. Obst. & Gynec. 53:432-441 (March) 1947.
17. Reid, D. E.: The Treatment of Prolonged Labor with Posterior Pituitary Extract, Am. J. Obst. & Gynec. 52:719-734 (Nov.) 1946.

Rest and work treatment

Our present method of management consists in alternating periods of rest under sedation with periods of work without it. For psychologic reasons the rest periods should be the usual hours of sleep. During the day, the patient is given as little sedation as possible; then, when night falls, she is given morphine or other sedatives to permit her to sleep. Most of the therapeutic procedures, such as intravenous feedings, should be carried out during the active period so as not to disturb the patient's sleep.

Surgical measures

The technique of stripping or rupturing the membranes has a limited value in the management of prolonged labor. Such procedures, as a rule, will increase the frequency of contractions in the normal case of labor. We should remember, however, that an open amniotic sac predisposes to intrauterine infection. Furthermore, Odell reported that 30 per cent of his patients with prolonged labor had premature rupture of the membranes. The wisdom of this procedure would, therefore, seem doubtful.

Efforts to dilate the cervix forcibly are universally condemned. Such measures as manual dilatation, the Voorhees bag, Willett's clamp, Dührssen's incision, Braxton Hicks' version, and forceps extraction through an incompletely dilated cervix all cause tissue destruction and spread bacteria throughout the pelvic structures, contributing definitely to the danger of serious maternal infection and increasing the risk of postpartum hemorrhage. In Odell's series[8] the incidence of postpartum hemorrhage was 4 per cent in the normal patients, but 7 per cent in patients who had had prolonged labors. When a prolonged labor terminated in spontaneous delivery, the incidence of excessive bleeding was only 6 per cent; following operative delivery it was 10 per cent. *These figures stress the importance of noninterference.*

Management of the Delivery

The attendant must decide what type of delivery offers the mother the best prognosis for life and for future childbearing. In general, the more conservative the delivery the better the outlook for the mother. The

fetal death rate, however, is somewhat greater when a prolonged labor is managed conservatively, since the exposure to infection and the trauma in the birth canal is increased with the prolongation of the labor[4]. The ultimate effect of such a labor on the living children has not been evaluated, but may be worse than we realize; nevertheless, consideration of the mother is of prime importance. Most clinics stress the importance of a conservative approach, even if it means sacrificing the infant's life.

Spontaneous delivery offers the best prognosis to the mother, although some patients with inertia or prolonged labor should have a cesarean section. Waters has achieved remarkable results with extraperitoneal cesarean section[18]; a low cervical cesarean with the use of adequate chemotherapy has also produced excellent results[19]. If vaginal delivery is chosen, outlet forceps, when the fetal head is crowning, are justified to relieve the patient of her last efforts in bearing down.

The selection of the mode of delivery rests upon several points. In the uninfected patient with uncomplicated inertia, questionable disproportion, and a valuable baby, cesarean section should be done by one of the two methods just mentioned. When considering section, however, the obstetrician must recall that the overall mortality rate for this operation in 1938 was 19 per cent. Most of these deaths occurred in patients who were exhausted or in shock.

Management of Delivery

Preparations

Adequate preparations for complications should be made well in advance of the delivery, and should include preparation of blood, plasma, and fluids for intravenous administration; selection of proper assistants; choice of anesthesia; and adequate equipment. At least 1,000 cc. of blood should be typed and available in the delivery room in anticipation of postpartum atony of the uterus with hemorrhage. Plasma and other fluids should also be available. Adequate assistance at the time of delivery may be lifesaving for the mother. For the ideal delivery, the minimum personnel should include a trained obstetrician, an assistant to the obstetrician, a physician to care for the infant, a competent anesthetist, and two nurses. I realize that it is frequently impossible to provide all these assistants, but every effort should be made to obtain an adequate number, particularly in these cases of uterine inertia.

Anesthesia

In cases of prolonged labor there is sufficient time to plan the anesthetic well in advance of the delivery. *Spinal anesthesia* is relatively safe only under the most rigid restrictions. The death rate from spinal anesthesia continues to rank higher than that from any other anesthetic agent. The incidence of deaths from spinal anesthesia reported to the North Carolina Maternal Welfare Committee[1] equals the incidence of deaths from all other anesthetic agents.

Chloroform, which has been used widely as an anesthetic agent in obstetrics, has a decided toxic effect on both the heart and the liver, and for this reason has been practically abandoned in the larger clinics. *Cyclopropane* is a newer anesthetic of very high potency. Its chief toxic effect is on the heart, and it may cause sudden death from ventricular fibrillation[14]. Its main disadvantage is that the patient breathes rapidly and deeply during labor pains, and may get into an advanced stage of narcosis before it is recognized.

Nitrous oxide and oxygen is a safe anesthetic agent, provided that the oxygen concentration is maintained at 20 per cent or greater. Many patients, however, will not be free of pain with this concentration. *Sodium pentothal* has been widely used in a number of clinics, most recently at Johns Hopkins[20]. Results seem favorable, but only if the drug is given for a short interval during the actual delivery. The patient should be on the table prepared for delivery before its administration is begun. *Vinethene* is a safe anesthetic which is not used widely at present[21]. Its chief disadvantages are that it can be used only in procedures that require less than thirty minutes, and that it deteriorates rapidly in storage.

18. Waters, E. G.: Supravesical Extraperitoneal Cesarean Section; Presentation of New Technique, Am. J. Obst. & Gynec. 39:422-434 (March) 1940.
19. Settle, J. M., and Wilson, L. A.: Cesarean Section in Potentially Infected Patients Using Sulfathiazole in the Uterus and Peritoneal Cavity, Am. J. Obst. & Gynec. 54: 801-803 (Nov.) 1947.
20. Hellman, L. M., Shettles, L. B., Manahan, C. P., and Eastman, N. J.: Sodium Pentothal Anesthesia in Obstetrics, Am. J. Obst. & Gynec. 48:851-860 (Dec.) 1944.
21. Donnelly, J. F.: Analgesia in Obstetrics, Am. J. M. Sc. 207:804-811 (June) 1944.

Ethylene and oxygen offer one of the most satisfactory combinations available, except for the danger of explosion. *Open-drop ether* is considered to be one of the safest types of anesthesia, but it is not as safe as local anesthesia. The principal danger is vomiting and aspiration. *Local pudendal block* has been championed by DeLee for many years, and certainly represents the safest anesthetic method available. It can be used for a number of procedures, including mid-forceps extraction and cesarean section.

Summary

1. The incidence of prolonged labor is approximately 4 per cent of all deliveries.

2. Prolonged labor was a factor in 10 per cent of the maternal deaths in North Carolina during the past year.

3. Adequate prenatal care may prevent many of the serious consequences of prolonged labor.

4. Adequate nutrition is of paramount importance in pregnancy and in labor.

5. Chemotherapy is essential in the management of prolonged labor.

6. When secondary uterine inertia is present, rest should be provided at intervals by the administration of morphine sulfate or other sedatives.

7. There is no evidence that any drug will cause the cervix to relax in the active sense.

8. Posterior pituitary extract is of limited value in the treatment of inertia uteri.

9. Conservative management of prolonged labor offers a far better prognosis for the mother than do the more radical procedures.

10. There is evidence to suggest that the use of extraperitoneal cesarean section or low cervical cesarean section with chemotherapy may offer a better fetal prognosis without materially increasing the maternal risk.

Physical examination, even when most thorough and complete and scientifically accurate, gives information only as to the present status of the patient. A well-taken and correctly interpreted history, with the facts placed in proper time sequence, may give valuable knowledge concerning the development of the patient's condition during the preceding months and years particularly in those diseases which may run a long and intermittent course. A patient with a toxic goitre may give a clear history of past periods of toxicity even although the basal metabolic rate is normal at the time the patient is first examined.—Leslie Hurley: The General Practitioner and the Specialist, M. J. Australia 1:67 (Jan 17) 1948.

PRIMARY STAPHYLOCOCCIC PNEUMONIA

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AHOSKIE

Increasing knowledge of acute bacterial pulmonary disease has shown us that pneumonia can no longer be considered a single disease entity, but that it comprises a group of specific infections, each of which produces an acute febrile illness associated with inflammatory changes in the lungs. Anatomic or descriptive terms such as lobar, broncho-, croupous, or atypical pneumonia will soon become obsolete and will be replaced by etiologic diagnoses such as type III pneumococcic, staphylococcic, rickettsial, or virus pneumonia. This concept first became important when type-specific antiserums were developed and has not lessened in importance with more modern methods of treatment.

Cases of pneumonia secondary to staphylococcic infection elsewhere in the body (osteomyelitis or carbuncles, for example), and the close association of staphylococcic pulmonary infection with influenza have long been recognized, but only recently has *primary staphylococcic pneumonia* been described as a separate clinical and pathologic entity. Since few reports concerning this disease have appeared in the literature—and still fewer reports of cases treated with penicillin—, it is felt that the presentation of 27 more cases, 14 of which were treated with penicillin, is warranted.

Cases Reported in the Literature

Fraenkel[1] in 1904 described the clinical course of influenza in which Staphylococcus aureus produced a rapidly fatal pulmonary disease. Chickering and Park[2] in 1919 reported 155 cases that occurred in conjunction with the influenza epidemic of 1918, and since then several other references have been made to the apparent symbiosis between the influenza virus and the staphylococcus. McCordock and Muckenfuss[3] pro-

From the Department of Pediatrics, Watts Hospital, Durham, North Carolina.

1. Fraenkel, A.: Spezielle Pathologie und Therapie der Lungenkrankheiten, Berlin, Urban und Schwarzenberg, 1904.
2. Chickering, H. T., and Park, J. H.: Staphylococcus Aureus Pneumonia, J.A.M.A. 72:617-626 (March 1) 1919.
3. McCordock, H. A., and Muckenfuss, R. S.: The Similarity of Virus Pneumonia in Animals to Epidemic Influenza and Interstitial Broncho-Pneumonia in Man, Am. J. Path. 9:221-252 (March) 1933.

duced pneumonia and death in rabbits within twenty-four to forty-eight hours by combining influenza virus and Staph. aureus for intranasal injection, while the staphylococcus alone produced insignificant lesions and the virus alone a non-fatal illness. Burgess and Gormly[4] reported 3 cases of rapidly fatal Staph. aureus pneumonia during the influenza epidemic in January, 1929. Finland, Peterson and Strauss[5] reported 66 cases of staphylococcic infection of the lungs complicating influenza during the fall and winter of 1940-41, and Baker[6] reported 4 cases from the same epidemic in North Carolina, with thorough autopsy descriptions.

Reimann[7] in 1933 presented 6 cases of primary staphylococcic pneumonia and called attention to the differences between this and other forms of pneumonia. Macgregor[8] reported 10 cases in 1936, and mentioned for the first time pyopneumothorax as a complication in 3 of these cases. In 1939 Kanof, Kramer and Carnes[9] reported 37 primary cases, and in 1942 Clemens and Weens[10] reported 6 additional cases and stressed the frequent occurrence of pyopneumothorax as a complication.

Prior to the use of penicillin as a therapeutic agent, mortality rates for primary staphylococcic pneumonia ranged from 22 to 100 per cent, the lower rates being in those patients who received surgical treatment after pyopneumothorax had developed. With the advent of penicillin surgical intervention has become less important, but by no means completely obviated. Philips and Kramer[11] in 1945 reported 5 cases of staphylococcic pneumonia and empyema in infants; all received penicillin and only 2 required surgical drainage. Davis, Hyman and Ruhstaller[12] in January, 1947, reported 7 cases with empyema; one child died thirty-six hours after admission to the hospital; the remaining 6 were treated with penicillin, both intramuscularly and intrapleurally, and none required surgical drainage.

Cases Seen at Watts Hospital

Since the sulfonamides were introduced in 1936 until July, 1947, there have been 27 cases of primary staphylococcic pneumonia in Watts Hospital (table 1). Thirteen were treated with sulfonamides, 8 with combined sulfonamide and penicillin therapy, and 6 with penicillin alone. There were 5 deaths—a mortality rate of 19 per cent. There have been no deaths since the use of penicillin was begun.

Age of patients

Aside from cases in association with epidemics of influenza, staphylococcic pneumonia is primarily a disease of children and young adults. Previous reports have been limited almost entirely to pediatric practice. In our series there were 19 children and 8 adults. Three of the 5 patients who died were adults. Two of those presented the usually accepted picture of sudden onset with high spiking fever and a rapidly fatal course.

Clinical characteristics

The majority of writers have described the onset of staphylococcic pneumonia as being characteristically sudden, with high fever, chill, rapid respiration, and cough. There was no distinctive onset in the cases observed here. In only 7 of our patients was the onset sudden; in 2 cases it was insidious, and in 17 a rapidly progressive upper respiratory infection culminated, after three to seven days, in a severe illness with marked respiratory embarrassment (often to the point of cyanosis), remittent fever (not always high), and production of grayish, purulent, bloody sputum. One child with cystic fibrosis of the pancreas had an insidious course of eight weeks' duration and ran a low-grade fever, finally succumbing to the pulmonary infection. The autopsy findings were characteristic of staphylococcic pneumonia.

4. Burgess, A. M., and Gormly, C. F.: Pneumonia in Relation to an Epidemic of "Mild" Influenza, with Report of Three Fulminating Cases Apparently Due to Staphylococcus Aureus, New England J. Med. 202:261-264 (Feb. 6) 1930.
5. Finland, M., Peterson, O. L., and Strauss, E.: Staphylococcic Pneumonia Occurring during an Epidemic of Influenza, Arch. Int. Med. 70:183-205 (Aug.) 1942.
6. Baker, R. D.: Staphylococcal Pneumonia during Epidemic Influenza in North Carolina, South. M. J. 35:240-247 (March) 1942.
7. Reimann, H. A.: Primary Staphylococcic Pneumonia, J.A.M.A. 101:514-520 (Aug. 12) 1933.
8. Macgregor, A. R.: Staphylococcal Pneumonia, Arch. Dis. Childhood 11:195-204 (Aug.) 1936.
9. Kanof, A., Kramer, B., and Carnes, M.: Staphylococcus Pneumonia; Clinical, Pathologic and Bacteriologic Study, J. Pediat. 14:712-724 (June) 1939.
10. Clemens, H. H., and Weens, H. S.: Staphylococcic Pneumonia in Infants: Occurrence of Pneumopyothorax, J. Pediat. 20:281-296 (March) 1942.
11. Philips, B., and Kramer, B.: Chemotherapy of Staphylococcus Aureus Infection of the Lung and Pleura in Infancy, J. Pediat. 26:481-488 (May) 1945.
12. Davis, W. S., Hyman, M. E., and Ruhstaller, F. D.: Penicillin as an Aid in the Treatment of Primary Staphylococcus Pneumonia with Empyema, J. Pediat. 30:55-63 (Jan.) 1947.

Table 1

Case	*Age (Years)*	*Days in Hospital*	*Onset*	*Positive Culture*	*Complication*	*Surgical Treatment*	*Medical Treatment*	*Result*
1	11/12	23	1 week	Sputum	Pyopneumothorax	Aspiration	Prontosil and sulfanilamide	Cured
2	4	21	3 weeks	Pleural fluid	Empyema	Thoracotomy and tidal drainage	Sulfanilamide	Cured
3	5/12	31	Sudden	Pleural fluid	Empyema	Aspiration and tidal drainage	Sulfanilamide	Cured
4	4	37	1 week	Throat	Empyema	None	Sulfapyridine	Cured
5	7	46	5 days	Throat	Lung abscess	None	Sulfapyridine	Cured
6	46	3	4 days	Lung, pleura and pericardium	Pericarditis	None	Sulfapyridine	Died
7	60	42	1 week	Pleural fluid	Empyema	Thoracotomy and tidal drainage; rib resection later	Sulfapyridine	Chronic draining sinus
8	1½	9	6 weeks	Throat and lung	(Cystic fibrosis of pancreas)	None	Sulfadiazine	Died
9	1/12	20	4 days	Pleural fluid	Empyema	Thoracotomy and tidal drainage	Sulfathiazole	Died
10	3	7	3 days	Pleural fluid	Pyopneumothorax	Aspiration	Sulfadiazine	Cured
11	55	2	Sudden	Sputum	——	None	Sulfadiazine	Died
12	45	5	Sudden	Sputum and blood	——	None	Sulfadiazine and sodium sulfathiazole	Died
13	26	6	Sudden	Sputum	None	None	Sulfadiazine	Cured
14	78	9	Insidious	Throat	None	None	Sulfadiazine and penicillin	Cured
15	1/12	9	3 days	Throat	None	None	Penicillin	Cured
16	5/12	17	3 days	Throat	None	None	Penicillin, sulfadiazine, and sulfathiazole	Cured
17	2	12	4 days	Throat	None	None	Penicillin	Cured
18	63	14	1 week	Sputum	None	None	Penicillin and sulfadiazine	Cured
19	2	6	1 week	Throat	None	None	Penicillin	Cured
20	8/12	6	3 days	Throat	None	None	Penicillin and sulfadiazine	Cured
21	2/12	7	2 days	Throat	None	None	Penicillin and sulfadiazine	Cured
22	50	15	Sudden	Sputum	None	None	Penicillin	Cured
23	6	12	Insidious	Sputum	None	None	Penicillin (I.M. and aerosol)	Cured
24	7/12	5	2 days	Throat	None	None	Penicillin and sulfadiazine	Cured
25	1/12	5	2 days	Throat	None	None	Penicillin	Cured
26	74	34	Sudden	Sputum	None	None	Penicillin (I.M. and aerosol) and sulfadiazine	Cured
27	17	91	Sudden	Sputum, blood and pleural fluid	Empyema	Aspiration	Penicillin (I.M., I.P. and aerosol) and sulfadiazine	Cured

I.M. — Intramuscularly
I.P. — Intrapleurally

Gastrointestinal symptoms, noted by many writers as an outstanding complaint in staphylococic pneumonia, did not appear to be any more prominent in our series than in any other type of pneumonia. One child, however, was admitted with the presenting symptom of diarrhea.

The average duration of illness was twenty-one days in those patients who recovered and eight days in those who died. These figures correspond closely with those reported from elsewhere.

Complications

The high incidence of complications has been stressed in all recent reports. Empyema and pyopneumothorax have occurred so frequently that they might be considered a part of the disease rather than a complication. Ten of the first 13 cases treated here had complications, 7 of these being either empyema or pyopneumothorax. Since penicillin has been available, only one patient has developed empyema. Reports in the literature have stressed abscess formation as being characteristic of staphylococcic infection of the lungs; in our series this has not proven as important in treatment as pyopneumothorax and empyema, though these complications may have resulted from the rupture of an abscess and the formation of a bronchopleural fistula. Only one of our patients, a 7-year-old boy, developed lung abscess.

Laboratory findings

The presence of Staph. aureus as the predominating organism in the sputum (on both smear and culture), or in the throat culture from infants where sputum is unobtainable, and in the pleural fluid in cases of empyema was accepted as bacteriologic proof of the etiology. All of our cases had positive cultures from the sputum or throat, and those with empyema or pyopneumothorax had positive cultures from the pleural fluid. The organism was grown directly from the lung tissue on those cases that came to autopsy. It should be mentioned that the presence of Staph. aureus in the pleural fluid is considered a finding of great diagnostic and prognostic significance.

Too few blood cultures were made to be of any significance in this report, but it has been shown by other authors that bloodstream invasion by the staphylococcus has

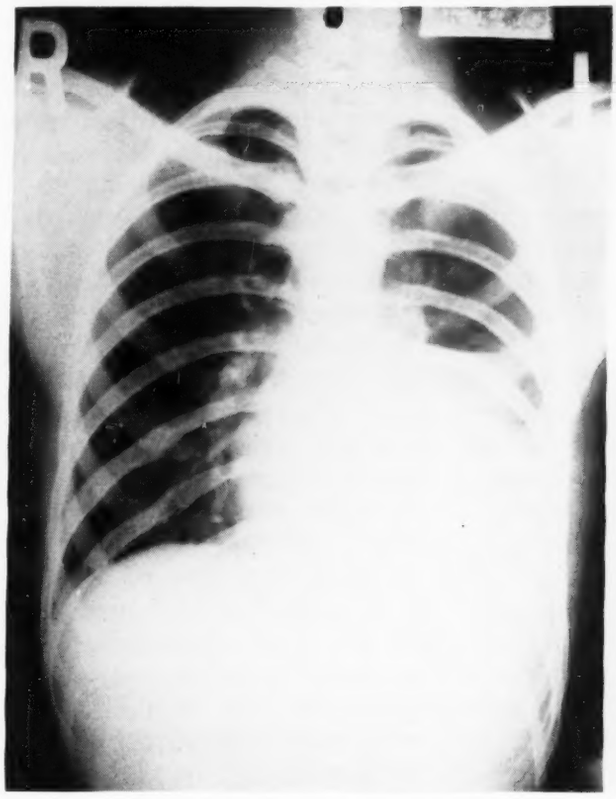


Fig. 1. X-ray of the chest in a case of primary staphylococcic pneumonia complicated by pyopneumothorax. Note the air and fluid levels.

the same relationship to primary staphylococcic pneumonia as transitory pneumococcemia has to pneumococcic pneumonia. It is felt that the bacteremia is secondary to the pneumonia and is of short duration.

The leukocyte count is by no means constant. Counts varying from 2000 to 70,000 were found in our series. It is generally assumed that a low white blood cell count indicates an overwhelming infection, and certainly it is not a hopeful sign.

X-ray findings

Roentgenographic studies are not as helpful in the diagnosis of the pneumonia as they are in the diagnosis of empyema and pyopneumothorax. X-rays should be made at frequent intervals to reveal these complications early if they develop. Views taken in the supine position—a technique often used with infants and seriously ill adults—may obscure the diagnosis, whereas a picture taken with the patient in the upright position will clearly demonstrate air and fluid levels in the affected chest cavity (fig 1).

Treatment

Before the days of the sulfonamides and

penicillin, surgery offered the best prognosis in cases of staphylococcic pneumonia with empyema or pyopneumothorax. Thoracotomy and the institution of tidal drainage was the procedure of choice, and the results were generally favorable. In the more severe cases it was necessary to resort to rib resection and irrigation.

The use of sulfonamides decreased the incidence of pleural complications little, but the combined use of sulfonamides and surgery considerably improved the mortality and morbidity rates. When penicillin became available, the mortality rates dropped even lower and, as penicillin can be injected into the pleural cavity easily and safely, surgical intervention has become less frequent. It is now employed only in those cases with massive involvement or with loculated areas of pus. Since 1943 there has been only one case of empyema here, and this was cured by aspiration of pus and the instillation of penicillin into the pleural cavity.

Medical treatment must be intensive. Sulfadiazine or sulfathiazole should be given in doses sufficient to maintain blood levels of 12 to 15 mg. per 100 cc. Penicillin should be given intramuscularly in large doses, and in cases of empyema or pyopneumothorax 100,000 to 400,000 units should be instilled into the pleural cavity daily following the aspiration of pus. Aerosol penicillin should be used to help combat the damaging process in the upper respiratory tract. Fresh blood transfusions should be given liberally, especially to infants whose antibody response is not good. Staphylococcic antitoxin was used in only 2 of our patients, one of whom died.

Surgical procedures are best withheld until it becomes evident that simple aspiration can no longer drain the chest or that the fluid has become loculated and cannot be reached with the aspirating needle. It is then imperative that the surgeon librate the pus. Thoracentesis with withdrawal of air affords relief in cases with pneumothorax.

Pathology

The pathologic lesions in primary staphylococcic pneumonia are limited to the respiratory tract. Frequently the epiglottis, larynx, and trachea are covered with a dirty, fibrinous, purulent exudate, and the mucosa is ulcerated. Practically always the bronchi and bronchioles are filled with bloody pus

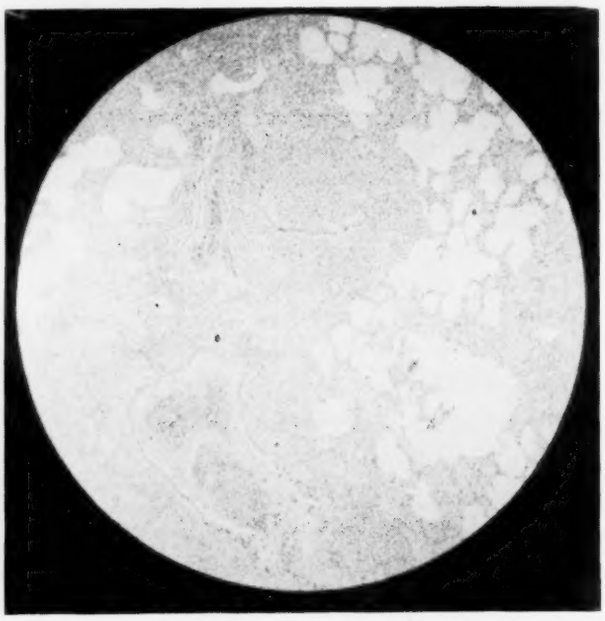


Fig. 2. Photomicrograph of a section of the lung from a case of primary staphylococcic pneumonia showing an area of consolidation, alveolar destruction, and early abscess formation.

and the bronchial mucosa is swollen and granular, the walls being infiltrated with polymorphonuclear leukocytes and mononuclear cells. The lungs are dark red in color, and are firm; the alveolar spaces are filled with pus, which completely destroys the normal architecture. Clumps of bacteria can be seen in those areas in which the alveolar markings are obliterated. The pleura is thickened; it is covered with a fibrinous exudate, and is hemorrhagic. In cases of empyema or pyopneumothorax the pleural cavity contains considerable cloudy hemorrhagic fluid from which the staphylococcus can be cultured easily. The hemorrhagic phenomenon and the tendency toward the formation of multiple miscroscopic abscesses are outstanding characteristics (fig. 2).

Summary and Conclusion

Between 1936 and July, 1947, there have been 27 cases of primary staphylococcic pneumonia in Watts Hospital, 5 of which were fatal. Complications occurred in 10 of the 27 cases. In the 14 cases treated with penicillin since it was introduced in 1943 there has been only one case of empyema and no deaths.

The clinical and pathologic features of primary staphylococcic pneumonia have been discussed, and a brief outline for therapy has been presented. Penicillin, intra-

muscularly, intrapleurally, and by inhalation, has been the factor responsible for lowering the mortality rate and the incidence of complications.

It is to be assumed that, with the liberal use of sulfadiazine and penicillin in modern practice, many cases of staphyloccic pneumonia are nipped in the bud, and therefore go unrecognized. Generally speaking, staphylococcic pneumonia is not dreaded now as it formerly was, but it still demands respect as a virulent disease which is controlled only by vigorous therapy.

Maternal Welfare Section*

The Intelligent Use of Cesarean Section

Last month's issue of the NORTH CAROLINA MEDICAL JOURNAL carries an article by Dr. John T. Williams entitled "Cesarean Section in the Interest of the Mother." In this article Dr. Williams states that he has performed 251 cesarean sections during the five and a half years from January 1, 1942, to June 30, 1947. The article deals primarily with his philosophy of the indications for cesarean section and with the operative technique which he has used with such remarkable good luck, since he states that no maternal deaths have occurred in this series.

The Maternal Welfare Section of the NORTH CAROLINA MEDICAL JOURNAL for November, 1946, considered cesarean section as an obstetric problem. The Maternal Welfare Committee recognized the importance of this operation as a life-saving procedure for many patients, but found that the primary maternal mortality associated with cesarean section in the United States is at least 10 per cent. Statistics were given which showed that 24 per cent of the maternal deaths in a fifteen-state area were associatd with an abdominal delivery. Twenty-one of the 175 maternal deaths which occurred in North Carolina during the past twenty months were associated with cesarean section. Fourteen of these 21 patients had evidence of toxemia of pregnancy.

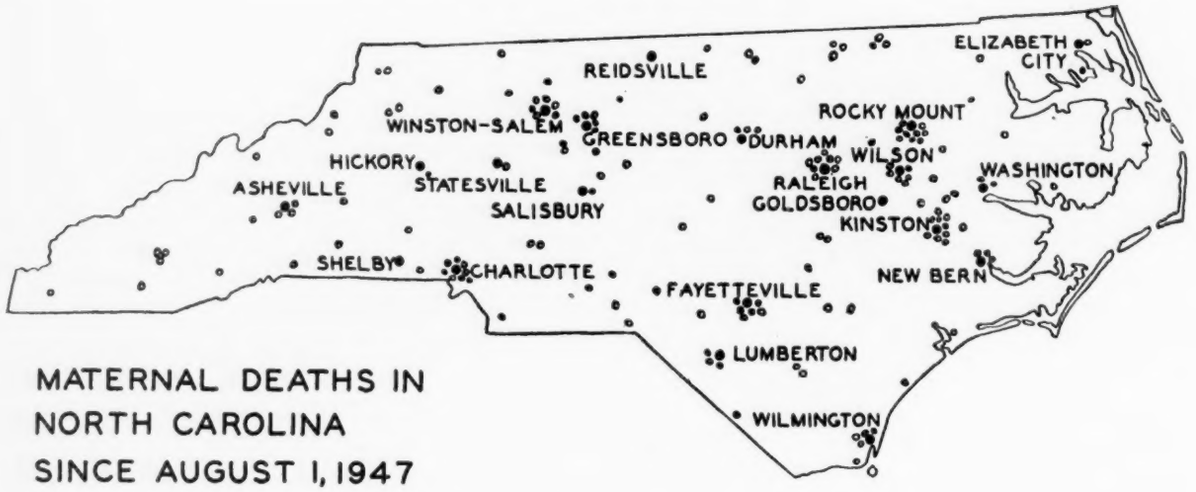
*Prepared by the Maternal Welfare Committee of the Medical Society of the State of North Carolina:

Frank R. Lock, M.D., Chairman	J. S. Hunt. M.D.
J. Street Brewer. M.D.	T. L. Lee. M.D.
G. M. Cooper, M.D.	Ivan Procter. M.D.
E. W. Franklin, M.D.	R. A. Ross. M.D.
	R. A. White, M.D.

Dr. Williams has worked under almost ideal conditions at Chelsea Memorial Hospital and other fine hospitals in Boston. He has the advantage of being a highly trained surgeon with a highly trained technical staff to assist him. A blood bank is available. The anesthetic is administered by an expert anesthetist, who gives the patient minute supervision during the entire operation. Evidently the vast majority of his cases were elective operations performed before the onset of labor, when the patient was in ideal physical condition.

Conservatism in the use of abdominal delivery has been advocated by every obstetric leader — DeLee, J. Whitridge Williams, Stander, Beck, and others. Their reason is the high mortality rate which is inevitably associated with the operation. The incidence of cesarean section compatible with good obstetric practice is generally held to be less than 5 per cent. Even if Dr. Williams has a huge obstetric practice and delivers 500 babies each year, 251 cesarean sections in five and a half years would make the incidence of cesarean section for his patients almost 10 per cent.

Dr. Williams recommends the use of spinal anesthesia, but makes no reference to a special technique or dosage of the anesthetic drug. We recognize the safety of spinal anesthesia administered by the special techniques recommended by Cosgrove and Adriani. The use of ordinary spinal anesthesia with surgical doses of the drug chosen, however, is exceedingly hazardous for obstetric patients. Our records include 6 cases of sudden death following the administration of a spinal anesthetic of the usual type. A seventh maternal death resulted from an infection of the meninges which began with a spinal anesthetic administered for a cesarean section. The Maternal Welfare Committee has pointed out the necessity for an expert anesthetist to administer spinal anesthesia. The patient should be given preoperatively a small dose of a barbiturate to protect her from a toxic reaction to the drug. An attendant should watch the patient constantly, recording the pulse, blood pressure, and respiration at intervals of not less than five minutes. Continuous oxygen should be given, and intravenous fluids should be prepared and ready for administration in case severe hypotension or shock



develops. Many authors feel that a vasopressor substance such as ephedrine should be administered prior to any spinal anesthetic.

Dr. Williams recommends the use of the Kerr type of low cesarean section, with a transverse incision made in the lower segment of the uterus. This technique is useful in the hands of a highly skilled operator. It has been disapproved by the Philadelphia Maternal Welfare Committee, however. In their experience, extensions of the incision, when they occur, may involve the uterine vessels. The profuse hemorrhage which results may not be controllable under some circumstances. The longitudinal incision is to be preferred for most operators.

In conclusion, the Maternal Welfare Committee recognizes cesarean section as a life-saving procedure. Even under ideal conditions, however, the risk of death from hemorrhage, sepsis, embolism, anesthesia, and other complications is fully 2 per cent, and the infant mortality exceeds that of vaginal delivery.

The art of understanding people and the complex situations in which they find themselves is not an easy one to acquire. It calls for much hard work. The doctor must be a person who is willing to do this work, not one who seeks to find an easy answer. The doctor is now being called upon to be a sociologist as well as a physician in his outlook. The narrow fields now being cultivated in medicine, surgery or any of the specialties are not broad enough to retain a full professional status for their practitioners. Without a social point of view these specialties are trades.—Dwight O'Hara: Admission to Medical Schools, Rhode Island M. J. 31:186 (March) 1948.

CHAPTERS IN THE HISTORY OF THORACIC SURGERY

J. C. TRENT, M.D., F.A.C.S., *Editor*

IV

PULMONARY RESECTION

Thoracic surgery as a specialty came of age with the establishment of pulmonary resection as a routine procedure. Today intratracheal positive pressure anesthesia, massive blood transfusion, and chemotherapy make it possible to perform lobectomy and pneumonectomy daily with relative safety on all types of patients.

The advances in thoracic surgery for many years emanated from Europe. Not until 1925, after the publication of John Alexander's *Surgery of Pulmonary Tuberculosis*, did the American surgeon attack the problem of chest surgery with any degree of enthusiasm. Since that time the emphasis in this field has gradually shifted from the continent to America, where leadership has been maintained to the present time.

Glück[1] in 1881 first demonstrated that resection of an entire lung could be successfully performed in rabbits. Biondi[2] a year later reported 30 pneumonectomies in animals. Other investigators continued to report experimental results, but it was not until 1891 that a successful limited pulmonary resection was performed on a human

1. Glück, T.: Experimenteller Beitrag zur Frage der Lungenexstirpation, Berl. klin. Wchnschr. 18:645-648, 1881.
2. Biondi, D.: Estirpazione del polmone, Gior. internaz. d Sc. med., Napoli, n.s. 4:759, 1882, and 5:248; 417, 1883.

being by Tuffier[3], who resected an indurated tuberculous area in the upper lobe. The patient remained well for seven years, then died of grippe. Other sporadic reports of successful partial or complete lobectomies, chiefly in cases of tuberculosis or bronchiectasis, appeared in the following three decades. It was not until 1929, however, that attention was forcefully called to the feasibility of lobectomy as a routine procedure. Dr. Harold Brunn[4], of San Francisco, reported 6 lobectomies with only one death. He wrote:

"It seems remarkable that so few articles or discussions are to be found during the last few years on lobectomy. The discussion has rather concerned the substitutes that might be used in its stead, based no doubt on the theory that the operative mortality forbids its use or that the technic of the operation has become a fixed procedure.

"Lobectomy, that is, the removal of one or more diseased lobes of the lung, must appeal to every one as the ultimate goal in surgical procedures on the chest. By this method the diseased lobe is removed at one stroke; the period of convalescence is diminished, and deformity does not result. The method also more nearly conforms to the procedures surgeons are accustomed to apply for diseases in other organs of the body. Just as cholecystectomy superseded cholecystotomy and as hysterectomy superseded the old time method of extraperitoneal treatment of the uterine stump for fibroids, may one not also expect in the future that with improved technic and lowered mortality lobectomy will become the operation of choice in many diseased conditions of the lung?"

Following this report the practice of lobectomy spread, and within the span of a few years it became an established procedure. More recently Overholt in Boston has revived the operation of segmental lobectomy, applying the newly gained knowledge of the segmental anatomy of the lung described by Brock, Huber and Jackson, and others.

After Glück's pioneer work on pneumonectomy in rabbits, much experimental work on the subject was performed during the succeeding fifty years, principally on healthy animals. This work obviously, therefore, could not be transferred directly to the treatment of pulmonary disease in man, and it was not until 1931 that the first complete removal of a lung was planned and successfully executed.

3. Tuffier, T.: Chirurgie du poumon en particulier dans les cavernes tuberculeuses et la gangréne pulmonaire, Paris, Masson et Cie., 1897, pp. 31-36; also, Cong. internat. d. sc. med. a Moscov, 1897, Sect. Chir., 5-62.
4. Brunn, H. B.: Surgical Principles Underlying One-Stage Lobectomy, Arch. Surg. 18:490-515 (Jan.) 1929.

In that year Rudolf Nissen[5] of Berlin removed the bronchiectatic left lung of a 12-year-old girl by applying a mass ligature about the lung root and allowing the lung to slough out. Dr. Cameron Haight of Ann Arbor, in 1932, performed the second successful pneumonectomy, also for bronchiectasis, using a similar technique. A few months later Dr. Evarts Graham[6] of St. Louis performed the first one-stage pneumonectomy, using the individual ligation technique for the root vessels and bronchus. The patient, a 48-year-old physician who had a squamous-cell carcinoma of the bronchus, is alive and well today.

Following these successful cases the operation was taken up rapidly and improved by many surgeons, until today large series of cases have been reported with extremely low mortality[7].

In retrospect, the three papers which appear to have exerted more influence than any others, perhaps, upon the development of our technique of lobectomy and pneumonectomy are Harold Brunn's "Surgical Principles Underlying One-Stage Lobectomy" (1929), Cameron Haight's "Total Removal of Left Lung for Bronchiectasis" (1932[8], and Evarts Graham's "Successful Removal of an Entire Lung for Carcinoma of the Bronchus" (1933).

J. C. T.

5. Nissen, R.: Exstirpation eines ganzen Lungenfluegels., Zentralbl. f. Chir. 58:3003-3006 (Nov. 21) 1931.
6. Graham, E. A. and Singer, J. J.: Successful Removal of an Entire Lung for Carcinoma of the Bronchus, J.A.M.A. 101:1371-1374 (Oct. 28) 1933.
7. Meade, R. H., Jr., Kay, E. B., and Hughes, F. A.: A Report of 196 Lobectomies Performed at Kennedy General Hospital Chest Surgical Center from 1943 to 1946, with One Death, J. Thorac. Surg. 16:16-29 (Feb.) 1947.
8. Haight, C.: Total Removal of Left Lung for Bronchiectasis, Surg., Gynec. & Obst. 58:768-780 (April) 1934.

The doctor as middle-man. Medicine has made wonderful strides in the treatment of physical disease. We are all using the recent therapeutic agents every day, and it is not necessary to enumerate them. Through our dependence on the efficacy of specific therapy, however, we have become inclined to realize less and less the need of careful explanation and encouragement to the patient. I believe we are losing the art of medicine because we have been so excellently fortified by effective and specific drugs. One shot, one cure, so to speak, and we can be as rough and gruff as we please—the patient will get well. We are apt to become the middleman between the patient and the efficient ampule . . . So far, we have not invented a drug which can explain carefully to patients the nature of their illness and give them encouragement in their struggle. In the patient's mind, the doctor is still the one barrier between him and death.—A. S. Anderson: Mental Repercussion in Physical Disease, J. Florida M. Assoc. 34: 290 (Nov.) 1947.

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APRIL, 1948

THE CAMPAIGN AGAINST CANCER

It is a characteristic American fallacy that virtually anything can be bought with money. Like so many other fallacies, however, this one has some truth within its fabric. It is fallacious to think that money alone will buy a cure for cancer; but it is certain that the expenditure of large sums is necessary for a successful campaign against this dread disease. There is still much to be learned about cancer—but science is on the march, and the contributions made by the American people will hasten materially the day of victory.

Just now it seems that the road ahead is to be long, hard, tedious, and filled with obstacles. It may be that the conquest of cancer, like that of tuberculosis, will have to depend on careful, patient search for the individual cases in their incipiency, and appropriate treatment of each one. Or it may be that we are on the verge of discovering some remedy which will be as potent against cancer as streptomycin is proving to be in many hitherto fatal types of tuberculosis. At least, however, we know that cancer does not get well spontaneously, and that, whatever the final answer to the problem, the search for the individual cases must go on.

The story of what North Carolina's State Board of Health is doing to fight cancer, in cooperation with the Cancer Committee of the State Medical Society and the North Carolina Division of the American Cancer Society, was told by Mr. William H. Richardson in his weekly broadcast on April 17, part of which is quoted below:

"North Carolina's intensive fight against cancer was launched officially last month, when the Cancer Control Division of the State Board of Health began operation, with Dr. Ivan M. Procter, of Raleigh, as its director, and Mildred Schram, Ph.D. of Philadelphia, as his associate. They have been assigned offices in the Health Building, Caswell Square.

"Dr. Schram, formerly of Saint Louis, Missouri, served from June, 1932, until January of this year, as executive officer of the Donner Cancer Foundation of Philadelphia, formerly the International Institute of Cancer Research . . . Dr. Schram planned and organized a series of cancer prevention clinics, first in five teaching hospitals in Philadelphia, the number having grown to eleven, to include a group of non-teaching hospitals. She was a delegate to the International Cancer Congress in Madrid, in 1933, a guest of the Research Institute, Royal Cancer Hospital, London, and one of eleven American women cited for service in cancer control by the American Cancer Society.

"Upon assuming his duties, Dr. Procter outlined the policy to be followed in North Carolina's intensive war on cancer:

" 'The program is to be conducted locally through the Board of Health, in cooperation with the physicians comprising the medical society of the county in which a clinic is located. The local physicians will render the professional service.

" 'There will be two types of clinics. Detection clinics will be operated in both the larger and smaller communities of the state. These will be the medium of (1) screening the largest number of applicants, in order to find cancer in its earliest stages and while almost completely curable, (2) to educate the public in prevention, through early diagnosis and cure, and (3) to establish annual examinations among applicants.

" 'In North Carolina it will be the desire and policy of the Board to devote its funds and efforts to cancer detection and control, leaving the general health maintenance to the patient and practicing physician. The physical examination will be limited to those parts of the body where cancer most commonly occurs and is detectable and curable. Those examinees who have positive findings will be referred to their personal physician. Examinees

without a personal physician will be asked to select one from a list prepared by the local medical society.

" 'Cancer diagnostic and management clinics will be established in cities where the services of pathologists and other specialists are available. Suspected cancers located in detection centers will be referred to cancer diagnostic clinics for final diagnosis and recommendation as to management. The patient will be returned to his or her personal physician for treatment.

" 'Clinics, where practical, will be conducted in hospitals approved by the American College of Surgeons, but all cancer clinics must be approved by the American College of Surgeons.

" 'There will be seven diagnostic cancer clinics and 10 detection clinics.' "

The fight against cancer costs money—and much money. More than money is needed, however. We need the interest and the enthusiasm of doctors—especially of family doctors. Upon them rests the greatest responsibility for supplementing the State Board of Health's cancer detection program, and for seeing that the diagnosis of cancer is followed promptly by the proper treatment.

* * * *

CHILD HEALTH SERVICES IN NORTH CAROLINA

The supplement which is published with this issue of the NORTH CAROLINA MEDICAL JOURNAL contains the report of a study of child health services in North Carolina directed by the American Academy of Pediatrics, with the cooperation of the United States Children's Bureau and the United States Public Health Service. It is worth careful reading, for many reasons. One is that North Carolina was given the honor of being used as the "pilot" state for a nationwide survey to determine existing facilities for health care of children. Another reason is that the report contains much valuable information pertaining to North Carolina's problems of medical care. The final chapter —"Conclusions and Recommendations"—is especially worth while.

Apropos of the current renewal of interest in the general practitioner, it is worth noting that, of the visits made to children in North Carolina during the time included in the survey, 79 per cent were by general practitioners. This figure certainly does not suggest that the day of the family doctor is over in this state, at least.

A SOLUTION FOR THE PROBLEM OF NIGHT CALLS

A reasonable solution of the night call problem, which was discussed in last month's issue[1], has been offered by Dr. George Lull, secretary of the American Medical Association. Dr. Lull says that a number of county medical societies already maintain a physicians' telephone exchange where doctors' calls may be received and doctors located if their office or home telephones do not respond. Such an exchange can be utilized as at night or on holidays, simply by furnishing the exchange with a list of physicians who are able and willing to make night calls. Such physicians would probably include the younger general practitioners, newcomers to the community, and others in general practice. If such a roster were available, and its availability widely publicized, night calls for medical service would soon gravitate to this center and the patient would be assured the services of a physician.

Under such a system the necessity for calling many doctors would be eliminated. Two calls at most would be necessary. Where there is no physicians' telephone service, it might be possible to have the hospitals cooperate by handling such night calls.

The Medical Society of the District of Columbia and the Milwaukee County Medical Society have found such a plan practical, as have a number of other societies.

By this simple and practical expedient, which is doubtless in effect in modified form in a number of communities, the sick can be served and the medical profession can redeem its pledge of unselfish public service.

It is highly important that where such arrangements exist they be brought to the attention of the lay people in the community through appropriate public channels, not once but repeatedly, to keep the shifting populations well informed.

Few problems in the field of medical service have aroused so much public discussion. Whether resentment against physicians is justified or not, it does harm. The solution for this problem is so eminently simple and would reflect so favorably upon physician-patient relationships that medical societies everywhere are urged to give it serious consideration immediately.

1. Night Calls. Editorial. North Carolina M. J. 9:154 (March) 1948.

Clinicopathologic Conference

BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

This 49-year-old cotton-mill worker was admitted to the North Carolina Baptist Hospital on October 22, 1947, complaining of shortness of breath for the past ten weeks. In the summer and fall of 1945 he had had two attacks similar to the present one. Each of these attacks was chacterized by progressive dyspnea on exertion and some epistaxis. During the first attack his blood pressure was found to be 170. He was given digitalis and showed considerable improvement. His second episode of dyspnea was accompanied by ankle edema and was attributed to the fact that he neglected taking his digitalis. During this attack his systolic pressure went as high as 221. Ten weeks before admission to the hospital the patient again noted exertional dyspnea which was accompanied by some stinging pain in the chest but no true angina pectoris or palpitation. Marked orthopnea, ankle edema, and gaseous distention also developed and progressed up until the time of admission.

The patient stated that he did not tolerate greasy foods well and that he had been jaundiced with the last two episodes of dyspnea. Ten years before admission the patient had passed a kidney stone spontaneously, and in the fall of 1945 (during the second episode of dyspnea described above) he had hematuria for about one week. At this time he was taking Doan's kidney pills. His family history was non-contributory.

Physical examination on admission showed the temperature to be 99.8 F., the pulse 100, respiration 40, blood pressure 176 systolic, 100 diastolic. The patient was a large, edematous male appearing both acutely and chronically ill. He was thought to be icteric and was profoundly short of breath. There was marked pitting edema of the feet and ankles. The pupils were round, regular and equal, and reacted sluggishly to light. The optic fundi showed blurring of the disc margins, silver-wire arterioles, and minimal arteriovenous nicking. There were several pin-point exudates and hemorrhages scattered through both fundi. The pharynx was somewhat reddened and there was marked distention of the veins in the neck. The chest was symmetrical with equal expansion, and moist expiratory rales were heard at both lung bases posteriorly. No findings indicative of pleural fluid were noted. The heart was enlarged to the midaxillary line on the left; a gallop rhythm was noted, and a harsh, blowing, grade 3 systolic murmur was heard over the entire precordium. The pulmonic second sounds were accentuated more than the aortic. Abdominal examination was unsatisfactory, but the abdomen was thought to contain some ascitic fluid. Rectal and neurologic examinations were not remarkable.

Blood count showed 3,690,000 red cells, 9.5 Gm. of hemoglobin, and 10,100 white blood cells, with a normal differential. The urine had a specific gravity of 1.018 and gave a 4-plus reaction for albumin; it contained no sugar. Microscopic examination revealed 3 to 4 white blood cells per high power field and an occasional granular cast. The nonprotein nitrogen was 120 mg. per 100 cc. of blood. The carbon dioxide combining power of the blood was 12.5 milli-equivalents per liter. Blood chlorides were 628 mg. per 100 cc. The icterus index one week after admission was 10 units. A phenolsulfonphthalein test showed 30 per cent excretion of the dye in two hours. The patient's vital capacity was 600 cc. A Kahn test of the blood was negative. Stool examination showed no occult blood, but Endolimax nana and the larvae of Strongyloides stercoralis were found.

An electrocardiogram showed left axis deviation and changes interpreted as indicating myocardial disease and digitalis effect. A chest x-ray showed cardiac enlargement without typical configuration, and bilateral pulmonary edema.

During his hospital stay the patient's temperature was essentially normal except for two rises to 101.2 and 100.2 F. His pulse varied between 70 and 130. During the first twenty-four hours he was given 0.8 mg. of Digitoxin intravenously and intramuscularly, and 0 3 Gm. of Digitora. During the remainder of his hospital stay he received from 1 to 3 cat units of Digitora daily for a total of 1.4 Gm. in eight days. He was first given nasal oxygen and later put in an oxygen tent, and was also given aminophylline, ammonium chloride, magnesium sulfate, morphine, and Demerol.

In spite of these therapeutic measures he continued to be extremely short of breath and his blood pressure remained between 240 and 220 systolic, 160 and 140 diastolic. His urinary output varied between 1500 and 2000 cc. daily. The signs of congestive heart failure became more marked. On November 1, 1947, he had a tonic convulsion and died shortly thereafter.

Discussion

DR. DAVID CAYER: This 49-year-old man dated the onset of his present illness to about two years before admission, when he began having exertional dyspnea and was found to have hypertension. He described episodes characteristic of paroxysmal dyspnea which in all likelihood represented left ventricular failure. The most frequent causes of left ventricular failure are hypertension, coronary artery disease, and insufficiency or stenosis of the aortic valve. Occasionally such episodes of dyspnea may be due to severe mitral stenosis in an individual who has a competent right ventricle; when tachycardia develops in such a person, pulmonary congestion results from the inability of blood to pass through the narrow mitral orifice.

Ten weeks before admission the patient again noted dyspnea, accompanied for the first time by "stinging pain" in the chest. Apparently the person who took the history felt that this pain did not represent true angina. The patient's dyspnea progressed to orthopnea, which was accompanied by abdominal distention and edema.

The vague gastrointestinal disturbances of which the patient complained are not uncommon in individuals with myocardial disease, particularly during episodes of congestive failure. The accompanying edema of the stomach and bowel, and the presence of ascitic fluid produce secondary changes in gastrointestinal motility and digestion.

Although the patient is said to have been jaundiced with each episode of congestive failure, no mention is made of the color of the urine or stools at these times. He was thought to be icteric when admitted to the hospital, but the icterus index was only 10 units. It is not uncommon for cardiac patients who have edema, pallor, and anemia to appear to have mild jaundice. True jaundice is an unusual finding in uncomplicated heart failure. Where right-sided heart failure and hepatic congestion have been present for years, jaundice may appear, but liver enlargement is easily demonstrated in such patients; there is no mention of such a finding in this patient. Jaundice may also follow large pulmonary infarcts; in such cases it is due to the fact that the rapid destruction of blood liberates pigment faster than the liver can remove it from the circulation. Nothing in the physical examination or history suggests pulmonary infarction in this case, and no such finding was noted in the report of the chest film.

In a patient this age the gross hematuria noted in the past history would most likely be due to a stone, infection, or carcinoma. The absence of chills, fever, or pyuria, as well as the duration of the genito-urinary symptoms, makes the possibility of infection and carcinoma unlikely, and we have the additional information that the patient passed a stone ten years before admission.

The findings in the optic fundi are indicative of an extensive vascular disturbance. The signs described in the chest could be explained on the basis of a moderate degree of pulmonary congestion.

The cardiac findings are indicative of both hypertrophy and dilatation. It would be helpful to have a more complete description of the "harsh, blowing, grade 3 systolic murmur" which was described as audible over the entire precordium. It is not stated whether there was any point of increased intensity or radiation, and there is no description of the murmur at the lung base, and no mention of a thrill. The most likely explanation for the murmur would be regurgitation of blood from ventricle to auricle, due to heart disease and left ventricular dilatation, to a deformity of the mitral valve, or to other factors such as the anemia. There is nothing to support the diagnosis of aortic or pulmonary stenosis as a cause of the murmur. I would be most reluctant to make the diagnosis of a patent ductus arteriosus without any mention of a diastolic component to the murmur. The finding of an accentuated second pulmonic sound is of considerable interest, however, and suggests the possibility of some right-sided heart strain. Although an accentuated second pulmonic sound may accompany generalized heart failure, it is seen more frequently in

cases of mitral stenosis or where pulmonary disease is present. There is nothing to suggest any primary pulmonary disease, however.

The film of the chest should have shown a more typical left ventricular configuration if hypertension alone were responsible for the patient's congestive failure. The x-ray findings, plus the accentuation of the second pulmonic sound, suggest the possibility of a second cardiac lesion, rheumatic or possibly congenital, complicating the hypertension.

I believe that the most likely explanation for all the findings in this case would be a benign form of nephrosclerosis of several years' duration, with a rapid terminal progression of this disease. The autopsy probably showed generalized arterial disease, involving coronary arteries as well. The possibility of an additional cardiac lesion, either rheumatic or congenital, is suggested by the x-ray and auscultatory findings. There is also a history of renal stones. I do not believe any gallbladder disease or primary gastrointestinal lesion was found.

Dr. Cayer's Diagnoses

1. Nephrosclerosis
2. Generalized arteriosclerosis involving the aorta and coronary arteries.
3. ? Rheumatic valvular deformity or congenital heart disease.
4. Nephrolithiasis

Anatomic Discussion

DR. LADD W. HAMRICK, JR.: The most significant anatomic findings were in the cardiovascular, pulmonary, and respiratory systems.

The heart weighed 750 Gm. and showed marked hypertrophy of the left ventricle and moderate hypertrophy of the right ventricle. An area of myocardial infarction 2 by 3 cm. in diameter was present at the apex of the left ventricle, and a small mural thrombus was attached to the endocardial surface. This infarct was approximately three weeks old. There were two defects of the interauricular septum. One of these measured 1 by 0.5 cm. and represented a patent foramen ovale; the other measured 4 by 3 cm. and was located at the base of the septum.

The coronary arteries showed marked arteriosclerosis, but no thrombi were demonstrable in their lumina. Throughout the musculature of the left and right ventricles there were many small areas of fibrosis. The aorta and the majority of the large vessels of the body showed moderate to marked arteriosclerosis. Arteriolar sclerosis was present in the kidneys, adrenals, pancreas, and spleen.

The right pleural cavity contained 1400 cc. of amber fluid. Both lungs showed pulmonary edema, large numbers of heart-failure cells, and moderate interstitial fibrosis.

Each kidney weighed 175 Gm. and presented a finely granular surface. Several small calculi were attached to the renal papillae in the pelvis of each kidney. Microscopic examination showed changes consistent with the marked degree of arteriolar sclerosis

Other findings included chronic passive congestion of the viscera, early cardiac cirrhosis of the liver, an infarct of the spleen (1 by 1 cm. in diameter), and 1750 cc. of fluid in the peritoneal cavity.

Death in this case was apparently due to a combination of marked congestive heart failure and renal insufficiency. The interauricular septal defects probably played little part in the patient's demise, except that they accentuated the degree of heart failure once it was established.

Anatomic Diagnoses

1. Arteriolar nephrosclerosis and arteriolar sclerosis of the spleen, pancreas and adrenals
2. Arteriosclerosis, generalized.
3. Myocardial hypertrophy and myocardial fibrosis
4. Myocardial infarction at the apex of the left ventricle, with a mural thrombus.
5. Patency of the foramen ovale
6. Patency of the ostium primum
7. Chronic passive congestion of the lungs with pulmonary edema and pulmonary fibrosis
8. Early cardiac cirrhosis of the liver
9. Hydrothorax, right, and hydroperitoneum
10. Infarct of the spleen
11. Renal calculi, bilateral

Concluding Remarks

DR. C. C. CARPENTER: I wish to confine my discussion to the hemodynamics of inter-

auricular septal defects. I refer you to Uhley's explanation of the shunting of blood from the left to the right auricle through septal defects[1]. He describes his idea of the hemodynamics involved as "a new concept" of the mechanism. The case reported by him also showed mitral stenosis.

It is generally accepted that the blood flows through atrial septal defects from left to right, thereby placing a mixture of arterial and venous blood in the right auricle. To make this possible, the pressure in the left auricle must be greater than that in the right auricle. It is obvious that mitral stenosis causes an obstruction to the normal flow of blood from the left auricle to the left ventricle, and increases the left intra-auricular pressure. Hence, if there is an opening between the auricles, blood flows from left to right.

Uhley contends that the flow from left to right is assisted by posture. When man assumes the upright position, the anatomic position of the heart is such as to place the left auricle above the right. In order to study the effect of gravity, Uhley cemented two rubber bags of equal size and thickness together, and made an opening between them through the common wall. Water was passed through the two bags with equal pressure, while the bags were in a vertical position. The bags remained equal in size, and the outflow at the bottom from each was equal. The chambers were then placed on the side, one being above the other, and the experiment was repeated. The lower chamber slowly dilated as the upper became correspondingly smaller. This experiment was advanced by Uhley as evidence that the shunting of blood from the left to the right auricle, in the presence of a defect in the interauricular wall, is due to gravity.

Brannon, Weens and Warren[2], using the technique of catheterization of the heart and great vessels, made a study of Uhley's concept. They inserted a catheter into the upper vena cava and took samples of blood from a patient without a septal defect. They repeated the procedure for the inferior vena cava and for the right auricle, and found the oxygen content of the three samples of blood essentially the same. The experiment was repeated in a patient with an interauricular septal defect. The sample of blood removed from the cavity of the right auricle had a higher oxygen content than the samples removed from the superior and from the inferior vena cava. This finding was considered to be evidence that, in patients with interatrial septal defects, blood is shunted from left to right.

In order to evaluate the concept advanced by Uhley, the patient with the catheter in the right auricle was suspended in a vertical position with the head down, and additional samples of blood were obtained as in the former experiment. The oxygen content of blood in the left auricle was not reduced, as it should have been if the flow of blood had been reversed by gravity. According to these investigators, the flow of blood from left to right in interauricular septal defects is independent of gravity.

Another point of interest is the accentuation of the pulmonic second sound in the case under discussion. We have generally considered this to be due to associated mitral stenosis. In this case, however, there was no mitral stenosis. Brannon, Weens, and Warren have also noted accentuation of the pulmonic second sound in this condition, without mitral stenosis.

1. Uhley, M. H.: Lutembacher's Syndrome and a New Concept of the Dynamics of Interatrial Septal Defect, Am. Heart J. 24:315-328 (Sept.) 1942.
2. Brannon, E. S., Weens, H. S., Warren, J. V.: Atrial Septal Defect: Study of Hemodynamics by the Technique of Right Heart Catheterization, Am. J. M. Sc. 210:480-491 (Oct.) 1945.

Good News About Diabetes

"The life expectancy of diabetics has been constantly increasing over the last twenty-five years and probably will continue to gain," Herbert Yahraes declares in **Good News About Diabetes**, a 32-page Public Affairs Pamphlet issued recently.

The average 10-year-old diabetic can expect to see 55; the 30-year-old can expect to live to 60-plus; the 50-year-old to 66; and the 60-year-old to more than 70.

This good news about an ailment which ranks eighth among all causes of death in the United States comes at a time when all indications show that there are about twice as many diabetics as anyone had suspected. The probability is, according to the pamphlet, that we have a diabetic population of about 2 million. "Almost half these people don't know that they have diabetes and many of them don't even know they are sick," Mr. Yahraes points out.

Good News About Diabetes, by Herbert Yahraes, is Pamphlet No. 138 in the series of popular, factual, 20-cent pamphlets issued by the Public Affairs Committee, Inc., nonprofit, educational organization at 22 East 38th Street, New York 16, N. Y.

MEDICOLEGAL ABSTRACT

J. F. OWEN, M.D., LL.B.

RALEIGH

GUARDIAN AND WARD: *A court may grant general guardianship for the person and his estate, or the appointment of guardians for the person and the estate may be separate.*

In this case a retired minister who had, during his active years, been able to acquire a small fortune became so infirm physically and mentally that he appeared in need of a guardian. The court was duly petitioned for a general guardian to manage his estate and to have custody of his person. Specifically the estate consisted of the homestead and a dwelling situated back of the family residence, a vacant lot, and seventy-seven shares of American Telephone and Telegraph Company's preferred stock. The total income from the property, including a small pension, amounted to approximately $1,480.00 per year.

The evidence produced in superior court tended to show that the alleged incompetent did not know the extent of his holdings, had for some time failed to collect his rents and pay taxes, and had some time previously executed a deed of which he had no remembrance. The court found as a fact that the man was the owner of considerable real estate, occupied by tenants who paid no rent, and that he was unaware of the nature and extent of his personal property. The court, from the evidence, was also of the opinion that the man was physically and mentally incapable of managing his property, and it ordered the appointment of a general guardian to manage the estate and to have custody of the person.

From this decision an appeal was made to the Supreme Court for relief. The appellate court agreed as to the need for a guardian to handle and manage the estate, but disaffirmed the order for a personal guardian, and so ordered. The following reason for the above decision was given: "Where an alleged incompetent, although not capable of handling his business affairs, appeared to be sufficiently in possession of his faculties so that no urgent reason existed for restricting his right of liberty, his tastes, and daily practices ought not to be encroached on by placing his person in the custody of a guardian."

In North Carolina, the appointment of a guardian is a judicial procedure in which the clerk of the superior court has jurisdiction. Guardians may be appointed when necessary for infants, idiots, lunatics, inebriates, and inmates of the Caswell Training School. Guardianships may be special or general, and in certain instances the clerk may commit the tuition and custody of the individual to one person and the charge of his estate to another.

Doctors frequently have patients whom they feel are capable of making a social adjustment in the community, and of assuming minor responsibilities. These same patients may not have sufficient mental capacity to enter into contractual relationships and to manage their business affairs. It should be consoling to the physician to know that he can recommend guardianship for such a patient without having him restricted as to his person.

(Wisconsin Supreme Court, January, 1942. Vol. 1, Northwestern Reporter, p. 873.)

TUBERCULOSIS ABSTRACTS

A Review for Physicians

Issued Monthly by the National Tuberculosis Association

Vol. XXI **April, 1948** **No. 4**

IT IS well to be reminded how great a contribution tuberculosis-conscious physicians can make to preventive measures against tuberculosis in the discharge of the ordinary duties of a general practice. As it becomes more generally recognized that any patient who consults a physician for any reason may be a case of tuberculosis a long step will have been taken toward the final eradication of the disease.

CASE-FINDING

Modern case-finding is without doubt one of the chief factors in the battle against tuberculosis. It began with emphasis upon contact examinations and extended to mass community-case-finding techniques. Now roentgen technique, particularly as exemplified by the miniature film, is in danger of crowding out other important diagnostic measures, notably tuberculin testing.

Nevertheless there are enormous difficulties in the way of procuring periodic chest films for everybody. Expense is one thing; personnel is another. Cooperation on the part of the public, while less tangible, is not to be ignored. As an experiment, total community surveys have been made and are now being undertaken by the Tuberculosis Division of the United States Public Health Service. Meanwhile it

would seem that other efforts, which attempt to focus roentgen case-finding technique, should not be neglected.

Fortunately it has long been recognized that tuberculosis is distributed in more or less well-defined patterns. It is more prevalent among the underprivileged; and therefore, in groups whose housing and nutrition are bad. There is evidence that other not well understood biological factors may also play an important role in morbidity and mortality characteristics. Numerous observations suggest that these factors are extremely subtle in their action. Among these may be mentioned the fact that the Chinese of San Francisco have a death rate from tuberculosis between three and four times that of the white population, while the Japanese of the same city, in the year before World War II, had a death rate less than that of the white population. Among the white population the death rate increases in inverse ratio to economic status. Case-finding studies, therefore, yield rich returns when directed toward special population groups, with a high incidence of tuberculosis.

Recently it has been recognized that general hospitals and clinics normally operate as concentrating mechanisms for cases of tuberculosis. Less consideration has been given the offices of the general medical practitioners. A pilot study by Dr. Albert C. Daniels, then in private practice in California, suggests that an alert general practitioner can contribute measurably to the solution of the tuberculosis problem in his community. While the figures are small they are nonetheless suggestive. Between October, 1941 and April, 1942, Doctor Daniels routinely fluoroscoped 250 patients. This included all new patients who passed through his office during this period. Films were taken of all patients who showed suspicious findings on fluoroscopy. Seven active cases of pulmonary tuberculosis were discovered in this group of 250 patients, a prevalence of 2.8 per cent. They varied in age from 18 to 57. None gave a history of close contact. Only one suspected that he might have tuberculosis; only one had physical signs suggestive of pulmonary disease.

In the seven previous years of general practice, Daniels had discovered only five active cases of pulmonary tuberculosis. Other physicians of the community, queried by Daniels, had discovered one or two active cases of pulmonary tuberculosis a year. Nevertheless, in this community, statistics suggest that approximately 30 per cent of the general population consult some physician during the year for some complaint.

Daniels assumed at this time that the prevalence of clinically significant tuberculosis in the population at large in his community was one per cent. This would have meant that there were approximately 500 cases existing in the county. If the prevalence of 2.8 per cent of active cases in his practice was generally applicable to other doctors' offices, then in the 15,000 patients who consulted doctors there should have been about 400 cases of tuberculosis, or about four-fifths of the active disease in the community. It is at once suggested that a modern case-finding program carried out by general practitioners by any recognized roentgen technique would go a long way toward the solution of the local tuberculosis problem.

If it is recognized that clinics, general hospitals and doctors' offices represent great natural sieves for the collection of tuberculous individuals, there is present here an extremely economical method of attack.

It would seem that the general practitioners' offices are the great neglected field for case-finding and may prove to be one of the most economical and satisfactory places for further effort. The crux of the matter lies in establishing cooperation between tuberculosis associations, the Public Health Services and organized medicine. This may seem a difficult task, yet its full accomplishment would draw into active cooperation in the antituberculosis movement every general practitioner of medicine in the United States.

A serious weakness in many case-finding techniques has been their inclusion of such a large part of the healthy segment of the population. Preliminary figures derived from 350,000 miniature films taken in California during the past year reveal a prevalence of only about half of one per cent or about one-sixth of the Daniels figure. A further weakness is the periodicity of these techniques. Hospitals, clinics and physicians' offices furnish a constantly functioning service that should not be neglected.

Case-Finding, Sidney J. Shipman, M.D., Editorial, The American Review of Tuberculosis, December, 1947.

PUBLIC RELATIONS

PUBLIC RELATIONS PROGRAMS OF STATE MEDICAL SOCIETIES

Preachers do not often get on the front cover of *Time Magazine*, as did Dr. Reinhold Niebuhr in the March 7 issue. A few Sundays ago I had the privilege of hearing Dr. Niebuhr fill the pulpit of The Memorial Church of Harvard University. During the course of his sermon, he made this statement:

> "When monarchy tried to maintain its old forms, it died. Where it sought rebirth to conform with oncoming democratic ideals, it lived. Democracy must shed its dead-self portions or it will not live."

The same can be said of free medicine. We must change our thinking and doing to meet today's demands—or regimented medicine, made strong by public approval, will seize our precious throne.

The American Medical Association and its constituent state medical associations recognize this truth. The American Medical Association is stepping up the tempo of its 10-point health program and general public relations program. A progress report delivered at the Interim Session held at Cleveland in January shows that if the medical profession continues its earnest effort to improve public relations, a health product will be produced that will outsell any creation the government can possibly devise. But talk must be replaced by action on every point. And action must be maintained until this full-rounded health job is finished.

Fortunately, state medical associations are not sitting apathetically by, waiting for George A.M.A. to effect this 10-point health program and overall public relations program unaided. Both the national association and the constituent associations are working most cooperatively together on this common objective.

Too much emphasis cannot be given to the principle that the public relations tasks of the medical profession must be implemented and performed primarily within the framework of active state and county public relations programs. The democratic nature of the organization of the American Medical Association is probably unparalleled. The practice and power of medicine remain basically in the hands of the local doctor and, by his freely granted consent, in the county and state societies.

Furthermore, it is in the doctor's office and in the county medical society's community area that most of the public relations needs and opportunities arise. It is here that the members of the society meet and decide public policies and plan and carry out public activities. Here they join other health organizations in effecting common health objectives. Here they achieve their miracles in research, in operative techniques, in curative drugs, and in lives saved and health restored. Here they are approached by representatives of the press and of the radio to give out facts and make comment. Here the invitations are waiting to address luncheon clubs, civic groups, women's groups, and other gatherings.

Here, too, is the place where rebating will have to be eliminated, where procedures for answering night calls will have to be set up, where means will have to be found for reducing waiting time in offices. In this area will come the solution to enable the citizens of the community to pay conveniently for complete medical care. Here is where the postgraduate education will take effect and medical care will be extended to rural areas.

State societies can be of tremendous assistance in bringing these public relations dreams into realities. A public relations survey conducted recently by the American Medical Association among constituent state societies shows that, of thirty-three replying states, twenty-nine are aiding and stimulating county societies in their public relations programs. As replies come in from remaining states, they will no doubt increase the number of state societies conducting specific statewide medical public relations programs.

States with active public relations programs are spending for the most part amounts which run between $12,000 and $35,000 per year. Channels of public relations information used by state societies vary considerably, with the exception of newspapers, radio, and speakers' bureaus. Twenty-six states utilize newspapers; twenty-two states work with radio; and twelve states have functioning speakers' bureaus. Literature, magazines, health films, medical meetings, and county meetings are employed by five states; advertising by four states; news letters and other health groups by three states; and legislative contacts, public relations conferences, and exhibits by two states. One state each uses voluntary health insurance week, schools, and a package library.

The question was asked of state societies: "What do you consider are your first five public relations objectives?" The answers received were as different as the twenty-nine states that sent them back.

"Promote medical prepayment plan" got the vote of nine states. "Improve medical care in rural areas" was listed by five states. "Develop press and radio relations," "Participation of society committees in public relations programs," and "Encourage better patient-physician relationship" were named by four states.

Three states put down "Arrange for 24-hour medical service for public," "Encourage participation of physicians in prepayment plan," "Educate physician as to value of public relations," "Improve professional relations with public," "Develop legislative activity," "Educate public about socialized medicine," "Correct unethical doctors," and "Educate public about the high cost of medical care, hospital care, drugs, and nursing care."

Two states listed "Convince public that society is interested in their health and welfare," "Get information to physicians about services available to them," "Aid county society to be effective in own areas," "Convince doctor he must participate," "Employ

field secretary to work with county societies," "Further relations with community groups," and "Assist in establishing health councils." Twenty-three other miscellaneous medical public relations objectives were listed by single states.

A definite advance in the field of medical public relations would be made if more uniform and common-denominator objectives would be agreed upon by the various states. The American Medical Association offers its assistance and services towards this end.

L. W. REMBER,
Executive Assistant,
American Medical Association

CORRESPONDENCE

To the Editor:

As Dr. Frank Richardson in his interesting contribution to the March number of the JOURNAL—"Laboratory Services for the Private Practitioner"—asks for suggestions from readers, may I offer the following:

In twenty-two years' association with an outstanding medical technologist, Max Riesenberg, who systematizes his work in such a manner that he accomplishes the equivalent of the work of any three technicians, I have often noted that the only disturbing factor is being hounded by physicians who refer their tests, for immediate reports. As accuracy depends upon quiet concentration and sufficient time for thoroughness, such physicians should realize that nagging without realization of the time required only postpones the rendering of their reports.

Thanking you for the publication of this comment if you deem it suitable, I am

Very sincerely yours
Karl Schäffle, M.D.
Asheville

Winthrop-Stearns Has "Procaine Penicillin"

New improved penicillin, called "Procaine Penicillin," is now available through Winthrop-Stearns, Inc.

Company literature describes it as "a suspension of crystalline procaine penicillin G in sesame oil." After intramuscular injection, it forms a depot from which the penicillin is slowly released to the body. Hence, a small injection of only 1 cc. daily is generally sufficient instead of an injection every three hours as required with aqueous solutions.

It is available in 10-cc. vials, containing ten doses of 1 cc. each. There are 300,000 units in 1 cc.

BULLETIN BOARD

MINUTES OF EXECUTIVE COMMITTEE MEETING

February 8, 1948

The Executive Committee of the Medical Society of the State of North Carolina met at 11 a.m. on Sunday, February 8, at The Carolina Hotel, Pinehurst.

The following were present:

Officers:
Dr. J. F. Robertson, President, Wilmington
Dr. V. K. Hart, first vice president, Charlotte
Dr. Roscoe D. McMillan, secretary-treasurer, Red Springs

Councilors:
Dr. John Cotten Tayloe, Washington, Second District
Dr. Donald B. Koonce, Wilmington, Third District
Dr. Newsom P. Battle, Rocky Mount, Fourth District
Dr. M. D. Hill, Raleigh, Sixth District
Dr. James H. McNeill, North Wilkesboro, Eighth District

Present by Proxy:
Dr. Irving E. Shafer, Salisbury, Ninth District
Dr. Donald M. McIntosh, Old Fort, Tenth District

Finance Committee:
Dr. V. M. Hicks, chairman, Raleigh
Dr. Robert J. Reeves, Durham
Dr. Wayne J. Benton, Greensboro

Mr. James T. Barnes, executive secretary, was also present.

President Robertson stated that the meeting had been called to consider the best means of dealing with unethical practices in the medical profession, particularly the practices of fee-splitting and accepting "kick-backs" on prescriptions, glasses, and laboratory work. He cited several examples of such practices going on in the state, and asked for discussion on the subject. After considerable discussion, Dr. Hart presented the following resolution:

"Whereas, most unfavorable national publicity has been given in current periodicals relative to the so-called 'kickback' from the optical companies to oculists, and

"Whereas, we believe this ethically wrong in that every transaction between doctor and patient should be direct with no hidden factor, and

"Whereas, this matter is destined within our own and other states to receive further investigation on the part of the federal government, and

"Whereas, such investigation with its inevitable publicity will only make worse already bad public relations of the medical profession and thereby further the cause of socialized medicine;

"Be it resolved by the Executive Committee of the North Carolina Medical Society that this committee disapprove of all such rebates and that all North Carolina ophthalmologists who are receiving such rebates be urged to discontinue such acceptance as soon as possible, with a concomitant raise in their charge for professional services and with glasses listed only at cost to the patient, and

"Be it further resolved that a copy of this resolution be sent to the secretary of the North Carolina Eye, Ear, Nose and Throat Society with a request that a copy be placed in the hands of its officials and all members practicing ophthalmology, and

"Be it further resolved that the Executive Committee of the North Carolina Medical Society dis-

approves of any form or type of rebate in any related branch of medicine or surgery."

Dr. Tayloe seconded the resolution, and Dr. Koonce offered the following amendment: "We are wholeheartedly opposed to any rebates in any form." After more discussion, the amended resolution was passed. Dr. McNeill then moved that each councilor give a report to the component societies in his district on the action taken and recommendations made at this meeting, and on the Executive Committee's disposition toward these questionable practices of ethics. Dr. Hart seconded this motion, and it was passed.

Dr. Hicks, chairman of the Finance Committee, reported that there was a deficit of $152.78 in the operation of the Society during 1947, as compared to a net gain in 1946 of about $10,000.00, and added that the proposed budget of $56,237.80 for 1948 will cause an operating deficit of $14,896.07. The suggested revenue budget for 1949, which calls for membership dues of $25.00, will raise the receipts to $72,565.50.

Dr. Benton questioned the necessity of raising the dues to $25.00, since the budget for 1948 calls for expenditures of only $56,237.80, whereas the estimate suggested for 1949 indicates receipts as $72,565.50. Dr. Hicks replied that one of the reasons was the deficit on which the Society would operate in 1948, and Dr. Hart stated that the Society must have a good reserve in order to meet such emergencies as lawsuits.

Dr. McMillan then read a letter from Dr. Frank Lock, chairman of the Committee on Maternal Welfare, presenting this committee's budget. On motion made by Dr. Hill and seconded by Dr. McNeill the budget was accepted.

Dr. Battle brought up some questions concerning the merger of the Hospital Saving and Hospital Care Associations. These were discussed, but no action was taken.

Dr. Hart, chairman of the Committee on Prepayment Medical Service Fees, reported that another meeting of the committee would be held on February 29 to discuss the fee schedule proposed to give complete coverage to individuals in the lower economic groups, with incomes not in excess of $3000 for a family group, $2500 for a couple, and $2000 for an individual.

Secretary McMillan then read a letter which Dr. Hart had written President Robertson, as follows:

"I am more than ever worried about the danger of compulsory health insurance. I am worried, also, about the indifference of the average doctor.

"There is little question that this would be a national calamity both for the profession and the public. Its implications are little appreciated by many, whether professional or lay people.

"If such a gigantic bureau were once established, employing at least five hundred thousand people, according to estimates, and spending sums estimated anywhere from four to twelve billion dollars a year, our present form of government is a thing of the past.

"I shall be one of the first to admit sins of commission and omission on the part of the medical profession, but this bill is not the answer to those sins.

"In short, I am writing you as president of the State Society and posing this question: Since President Truman has come out flat-footedly endorsing compulsory health insurance, is it not proper for the Executive Committee to pass a strong resolution condemning the same and giving it proper publicity? More than that, I think we should see that every doctor in this state is contacted and urged to write to his local congressman and ask him to oppose this communistic bill."

The following resolution proposed by Dr. Hart was then read: :

"Whereas, the President of the United States has unequivocably advocated compulsory health insurance; and,

"Whereas, A great amount of propaganda advocating socialized medicine has originated in the Social Security Board; and,

"Whereas, Such a practice of medicine is contrary to constitutional and traditional concepts of individual freedom; and,

"Whereas, The establishment of such a system would create another tremendous federal bureaucracy employing at least several hundred thousand employees; and,

"Whereas, Such a system would be a long step toward complete regimentation of our people; and,

"Whereas, such a system would inevitably produce an inferior caliber of medicine as evidenced by those countries in which it has been tried; and,

"Whereas, American medicine under our present system leads the world today; and,

"Whereas, Much of the propaganda that has been put out is completely false and misleading; and,

"Whereas, We feel sure that any improvement in medical care must be settled on a state basis rather than a national basis, due to wide variation in local conditions and needs;

"BE IT RESOLVED by the Executive Committee of the North Carolina State Medical Society that said Committee formally assembled entirely disapproves, without any reservations, of national compulsory health insurance as detrimental to both the interests of the patient and doctor and also as detrimental to the public welfare.

"BE IT FURTHER RESOLVED, That the action of this Committee be made known to the members of the State Medical Society at large and to the public."

Dr. Benton asked if adoption of the resolution could be construed as lobbying and if it would have any consequences as to the tax exemption on the income of medical organizations. Dr. Battle moved that the resolution as presented be accepted, with the understanding that it be released only after securing a legal opinion that it does not involve the Society in respect to any existing laws concerning tax exemption. Dr. McNeill seconded the motion, and it was carried.

Dr. Koonce reported that $2500 had been contributed to the McCain Memorial Fund, and asked what disposition should be made of it. It was the consensus that President Robertson should appoint a committee to work with Mrs. McCain in deciding the matter.

On motion, duly made and seconded, the meeting was adjourned at 4:45 p.m.

NINETY-FOURTH ANNUAL SESSION THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

May 3, 4 and 5, 1948

PINEHURST, NORTH CAROLINA

THEME FOR 1948

Develop a working partnership between organized medicine and every physician in North Carolina

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In order that the dignity and honor of the medical profession may be upheld, its standards exalted, its sphere of usefulness extended, and the advancement of medical science promoted, a physician should associate himself with medical societies and contribute his time, energy, and means in order that these societies may represent the ideals of the profession.

—Ch. II, Sec. 2, Principles of Medical Ethics of the American Medical Association

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HEADQUARTERS, HOTEL CAROLINA

American Plan

Rates

Hotel Carolina:

Single Rooms	$12.00
Double Rooms	$22.00

Plus 10% for gratuities

Holly Inn:

$11.00 per day, per person, including 3 meals per day. Allowance for Banquet and Ladies' Luncheon at Country Club, only.

Pinecrest Inn:

$5.00 per person, per day. No meals will be served.

Berkshire Inn:

$16.00 per day for two persons.

$ 9.00 per day, 1 person

Including 3 meals a day. No meal allowances made.

Manor Inn:

$5.00 per day, per person.

No meals will be served.

OFFICIAL CALL

According to the By-Laws, as amended at the 1940 Session, the House of Delegates will convene at Pinehurst, N. C., in the Ball Room of the Carolina Hotel, Monday afternoon, May 3, 1948, at 2:00 o'clock.

James F. Robertson, M.D., President.

Attest:
Roscoe D. McMillan, M.D., Secretary-Treasurer.

REGISTER PROMPTLY

Members of the State Medical Society, of the Auxiliary, and all visitors are requested to register promptly at the Registration Desk located in the Exhibitors' Tent which is situated on the left of West Parlor, Carolina Hotel, Pinehurst. Please present membership card when you register.

Registrations in charge of——

Miss Annie Williams	Red Springs
Miss Catherine Johnson	Winston-Salem
Miss Mary Lou Stack	Red Springs
Mrs. Grady Covington	McCain

EXHIBIT ATTENDANCE PRIZE AWARD

Every physician may obtain several opportunities at an award of a series of attendance prizes by visiting each of the technical display booths located in the exhibit area. Visit the booth and secure your numbered opportunity, a stub from which will be deposited for the public drawing and the awards to be made Wednesday, May 5, at 11:45 o'clock A. M. in the exhibit area.

GRAND PRIZE

Through the cooperation of Nash-Steele-Martin, General Electric Distributors for North Carolina, concessions have been obtained in securing an ELECTRIC REFRIGERATOR which is offered as the GRAND PRIZE for attendance of physicians at the EXHIBITS of the 94th Annual Session. Note that other prizes will be offered for such attendance.

IMPORTANT

Each essayist is requested (see By-Laws) to hand to the Chairman, following the reading of his paper, an original copy, together with any illustrations or other material used with the paper. Those desiring to review their papers before publication should make a carbon copy for such purposes. All papers should be typewritten and double spaced, with references arranged according to the form used in publications of the American Medical Association. The cost of cuts, in excess of $20.00, will be charged to the author.

BY-LAWS, CHAPTER III, SECTION 4

No address or paper before the Society except that of the President shall occupy more than fifteen minutes in its delivery; and no member shall speak longer than five minutes, nor more than once on any subject; provided that the terms of this section shall not apply to invited guests.

RESUME OF PROGRAM

SUNDAY, MAY 2, 1948

11:00 A.M.—Meeting of Officers and Directors of North Carolina Branch of American Academy of General Practice (Theater)
3:00 P.M.—North Carolina Branch of American Academy of General Practice (Theater)

MONDAY, MAY 3, 1948

9:00 A.M.—Registration Booth Opens
2:00 P.M.—House of Delegates of Medical Society (Ball Room)
5:30 P.M.—Intermission, House of Delegates of Medical Society
6:00 P.M.—Medical College of Virginia Alumni Dinner (Crystal Room)
6:00 P.M.—Dermatologists, Society of, Dinner (Stag Room)
8:00 P.M.—House of Delegates of Medical Society Reconvenes
8:30 P.M.—Bingo Party, Auxiliary to Medical Society (Pine Room)

TUESDAY, MAY 4, 1948

7:30 A.M.—Officers' Breakfast (Crystal Room)
8:00 A.M.—Registration Booth Opens
9:00 A.M.—Executive Board Meeting, Auxiliary to Medical Society (Pine Room)
9:15 A.M.—First General Session of Medical Society (Ball Room)
10:30 A.M.—Annual Meeting, Auxiliary to the Medical Society (Pine Room)
1:00 P.M.—Silver Anniversary Luncheon, Auxiliary to Medical Society (Pinehurst Country Club)
—Wake Forest Alumni Luncheon (Crystal Room)
—Duke University Medical Alumni Luncheon (Stag Room)
—University of North Carolina Medical Alumni Luncheon (East End of Dining Room)
1:00 P.M.—Western N. C. Branch of American Medical Women's Association Luncheon. See Dr. S. Weizenblatt for place.
2:30 P.M.—Section Meetings, Medical Society:
Section on Surgery (Ball Room)
Section on Practice of Medicine (Large Card Room)
Section on Gynecology and Obstetrics (Theater)
Section on Public Health and Education (Pine Room)
Section on Neurology and Psychiatry (Dutch Room)
4:00 P.M.—Tea, Auxiliary to Medical Society (West Parlor), honoring Mrs. W. Reece Berryhill, President; Mrs. Raymond Thompson, President-Elect; Mrs. James F. Robertson, wife of the President of Medical Society; Past Presidents
7:00 P.M.—President's Dinner (Main Dining Room)
7:45 P.M.—Presentation of President James F. Robertson, M.D.
Presentation of Guests
7:55 P.M.—The Medical Care Program in North Carolina —Mr. James H. Clark, Chairman, North Carolina Medical Care Commission, Elizabethtown
8:15 P.M.—Presentation of Golf Tournament Prizes
8:25 P.M.—Humorous and Inspirational Address —Mr. James E. Gheen, New York
10:00 P.M.—President's Ball (Ball Room)

WEDNESDAY, MAY 5, 1948

8:00 A.M.—Registration Booth Opens
9:00 A.M.—Second General Session of Medical Society (Ball Room)
10:00 A.M.—Bridge Party, Auxiliary to Medical Society (Large Card Room)
10:00 A.M.—Professional Advisory Committee, North Carolina State Blind Commission (Small Card Room)
11:45 A.M.—Awarding of prizes (Exhibit Area)
12:00 Noon—Conjoint Session (Ball Room)
1:00 P.M.—University of Pennsylvania Medical Alumni Luncheon (Stag Room)
—Jefferson Medical College Alumni Luncheon (Crystal Room)
—Tulane Medical College Alumni Luncheon (East End of Dining Room)
2:30 P.M.—Second Meeting House of Delegates (Small Card Room)
2:30 P.M.—Section Meetings, Medical Society:
Section on General Practice of Medicine and Surgery (Ball Room)
Section on Pediatrics (Large Card Room)
Section on Ophthalmology and Otolaryngology (Pine Room)
Section on Radiology (Dutch Room)
5:00 P.M.—Third General Session, Medical Society (Ball Room)

PROGRAM OF THE MEDICAL SOCIETY

MONDAY, MAY 3, 1948

9:00 A.M.—Registration Booth Opens
2:00 P.M.—First Meeting of House of Delegates (Ball Room)
Invocation—Reverend Thomas A. Fry, Pastor Presbyterian Church, Red Springs, N. C.
Intermission, 5:30 P.M. to 8:00 P.M.
6:00 P.M.—Medical College of Virginia Alumni Dinner (Crystal Room)
6:00 P.M.—Dermatologists, Society of, Dinner (Stag Room)

8:00 P.M.—House of Delegates Reconvenes (Ball Room)

TUESDAY, MAY 4, 1948

7:30 A.M.—Officers' Breakfast (Crystal Room)
Panel Discussion on Medical Organization Problems—Roscoe D. McMillan, M.D., Moderator
(1) Professional Relations Problem
8:00 A.M.—The Doctor and the Medical Society
C. F. Strosnider, M.D., Goldsboro
(2) Medical Service Problem
8:20 A.M.—Distribution of Medical Care-Prepayment Plans—V. K. Hart, M.D., Charlotte
(3) Public Relations Problem
8:40 A.M.—The Doctor, The Patient, and The Public—Donald B. Koonce, M.D., Wilmington
9:00 A.M.—Adjournment

8:00 A.M.—Registration Booth Opens

FIRST GENERAL SESSION

(Ball Room)

Tuesday, May 4, 1948

9:15 A.M.—Call to Order, Roscoe D. McMillan, M.D., Chairman Committee on Arrangements
Invocation
Announcements
Presentation of President James F. Robertson, M.D.
9:20 A.M.—Report of Committee on Award of Moore County Medal:
F. B. Marsh, M.D., Chairman, Salisbury
C. T. Smith, M.D., Rocky Mount
Robert L. McMillan, M.D., Winston-Salem
Robert M. McMillan, M.D., Southern Pines
9:30 A.M.—Report of Obituary Committee:
A. A. James, M.D., Chairman, Sanford
C. R. Monroe, M.D., Pinehurst
M. D. Bonner, M.D., Jamestown

In Memoriam, President Frank A. Sharpe, M. D.

—by—

Donald B. Koonce, M.D., Wilmington

9:45 A.M.—The Control of Electrolyte and Water Balance in Surgical Patients—William A. Wolff, Ph.D., Winston-Salem (From Section on Surgery)

10:05 A.M.—Report of Progress of the Maternal Welfare Committee — Frank R. Lock, M. D., Winston-Salem (From Section on Gynecology and Obstetrics)

10:25 A.M.—Atomic Warfare and Medicine—R. E. Lapp, Ph.D. (by invitation), Executive Director, Committee on Atomic Energy, Research and Development Board, Washington, D. C.

11:05 A.M.—Subject unannounced—J. deJ. Pemberton, M.D. (by invitation), Surgeon, Mayo Clinic, Professor of Surgery, The Mayo Foundation, Rochester, Minnesota

11:45 A.M.—The Place of BCG Vaccination in the Tuberculosis Program—H. S. Willis, M.D., Superintendent North Carolina State Sanatorium, McCain (Section on Public Health and Education)

12:05 P.M.—Physical Methods of Treatment in Psychiatry—William Sargant, M.D., Durham (From Section on Neurology and Psychiatry)

12:25 P.M.—Adjournment

ALUMNI LUNCHEONS

Tuesday, May 4, 1:00 P.M.

Wake Forest—Felda Hightower, M.D., President, Winston-Salem
(Crystal Room)

Duke University—Eleanor B. Easley, M.D., President, Durham
(Stag Room)

University of North Carolina—Arthur H. London, Jr., M.D., President, Durham
(East End of Dining Room)

SECTION ON SURGERY

(Ball Room)

Tuesday, May 4, 2:30 P.M.

H. H. Bradshaw, M.D., Winston-Salem, Chairman

Nephro-Ureterectomy, Indication and Illustrated Cases.
Hamilton W. McKay, M.D., and H. Haynes Baird, M.D., Charlotte
Discussion opened by Fred Garvey, M.D., Winston-Salem

Carcinoma of the Breast.
Russell O. Lyday, M.D., Greensboro
Discussion opened by B. E. Rhudy, M.D., Greensboro

Complications of Pott's Fracture.
Lenox D. Baker, M.D., Durham
Discussion opened by M. A. Pittman, M.D., Wilson

Pentothal, Nitrous Oxide-Oxygen Curare Anesthesia.
John C. Montgomery, M.D., Charlotte
Discussion opened by Roscoe L. Wall, M.D., Winston-Salem

Surgical Management of Present Day Empyema.
W. Paul Sanger, M.D., Charlotte
Discussion opened by Clarence E. Gardner, M.D., Durham

The Control of Electrolyte and Water Balance in Surgical Patients.
William A. Wolff, Ph.D., Winston-Salem
(Before First General Session, Tuesday, May 4)

SECTION ON PRACTICE OF MEDICINE

(Large Card Room)

Tuesday, May 4, 2:30 P.M.

Julian M. Ruffin, M.D., Durham, Chairman

Hypoglycemia in Diabetes Mellitus.
Charles W. Styron, M.D., Raleigh
Discussion opened by E. D. Peasley, M.D., Asheville

A Clinical Evaluation of Gastro-Intestinal Signs and Symptoms in Patients with Recent Myocardial Infarction.
David Cayer, M.D., Winston-Salem.
Discussion opened by Colin A. Monroe, M.D., Charlotte

Physiological Factors in Fatigue.
A. T. Miller, M.D., Chapel Hill
Discussion opened by John H. Ferguson, M.D., Chapel Hill

Panel Discussion on Peptic Ulcer.
Julian M. Ruffin, M.D., Moderator
Medicine—Walter R. Johnson, M.D., Asheville
Surgery—Howard H. Bradshaw, M.D., Winston-Salem
X-Ray—Allan Tuggle, M.D., Charlotte
Psychiatry—M. H. Greenhill, M.D., Durham

SECTION ON GYNECOLOGY AND OBSTETRICS

(Theater)

Tuesday, May 4, 2:30 P.M.

T. D. Tyson, M.D., High Point, Chairman

Panel Discussion on Obstetrical Hemorrhage.
Oren Moore, M.D., Charlotte, Moderator

Etiology and Diagnosis of Placenta Praevia.
W. Reed Wood, M.D., Greensboro

Treatment of Placenta Praevia.
C. H. Mauzy, M.D., Winston-Salem

Etiology and Diagnosis of Premature Separation of Placenta.
Eleanor B. Easley, M.D., Durham

Treatment of Premature Separation of Placenta.
W. L. Thomas, M.D., Durham

Antepartum and Postpartum Bleeding from Standpoint of General Practitioner.
J. Street Brewer, M.D., Roseboro

Postpartum Hemorrhage **per Se.**
Lance T. Monroe, M.D., Concord

Report of Progress of the Maternal Welfare Committee.
Frank R. Lock, M.D.,
Winston-Salem
(Before First General Session, Tuesday, May 4.)

SECTION ON PUBLIC HEALTH AND EDUCATION

(Pine Room)

Tuesday, May 4, at 2:30 P.M.

Robert F. Young, M.D., Halifax, Chairman

Vaginal Smears in the Diagnosis of Uterine Carcinoma.
John R. Kernodle, M.D., Durham
Discussion opened by Ivan M. Procter, M.D., Raleigh

Experiences of the Greensboro Tumor Clinic.
F. K. Harder, M.D., Greensboro
Discussion opened by M. B. Bethel, M.D., Charlotte

Recent Trends in Laboratory Procedures.
John H. Hamilton, M.D., Raleigh
Discussion opened by R. E. Fox, M.D., Raleigh

The Place of BCG Vaccination in the Tuberculosis Program.
H. S. Willis, M.D., Superintendent
North Carolina State Sanatorium
McCain, N. C.
(Before First General Session, Tuesday, May 4)

A Photofluorogram of Tuberculosis Control in the North Carolina State Board of Health.
T. F. Vestal, M.D., Winston-Salem
Discussion opened by E. H. Ellinwood, M.D., Newton

SECTION ON NEUROLOGY AND PSYCHIATRY

(Dutch Room)

Tuesday, May 4, 2:30 P.M.

Lloyd J. Thompson, M.D., Winston-Salem, Chairman

I. Prefrontal Lobotomy.

Use of Prefrontal Lobotomy in the Treatment of Intractable Pain.
Guy L. Odom, M.D.
R. Burke Suitt, M.D.
Durham

Psychological Studies of Prefrontal Lobotomy Patients.
Joseph E. Grassi, A.M. (by invitation)
Winston-Salem

General Discussion of Prefrontal Lobotomy.
Everett O. Jeffreys, M.D.
Winston-Salem

II. Headache.

Clinical Considerations of Headache.
Joseph B. Stevens, M.D., Greensboro

Physiology and Pharmacology of Headache.
Harold D. Green, M.D., Winston-Salem

Characteristics of Headache in Anxiety and Hysterical Reaction.
Lloyd J. Thompson, M.D., Winston-Salem

Physical Methods of Treatment in Psychiatry.
William Sargant, M.D., Durham
(Before First General Session, May 4)

PRESIDENT'S NIGHT

(Main Dining Room)

Tuesday, May 4, 1948

(Dress—Optional)

7:00 P.M.—Banquet
Oren Moore, M.D., Toastmaster
Charlotte
Invocation

7:45 P.M.—Presentation of President James F. Robertson, M.D.
Presentation of Guests

7:55 P.M.—The Medical Care Program in North Carolina
Mr. James H. Clark, Chairman
North Carolina Medical Care Commission
Elizabethtown, N. C.

8:15 P.M.—Presentation of Golf Tournament Prizes

8:25 P.M.—Humorous and Inspirational Address
Mr. James E. Gheen, New York

9:10 P.M.—Adjournment

10:00 P.M.—President's Ball
Bill Allen and his Orchestra
(Ball Room)

WEDNESDAY, MAY 5, 1948

8:00 A.M.—Registration Booth Opens

SECOND GENERAL SESSION

(Ball Room)

Wednesday, May 5, 1948

9:00 A.M.—Acute Poisoning in Children.
Jay M. Arena, M.D., Durham
(From Section on Pediatrics)

9:20 A.M.—Carcinoma of the Stomach.
Robert J. Reeves, M.D., Durham
(From Section on Radiology)

9:40 A.M.—External Diseases of the Eye—Motion Picture.
D. S. Currie, Jr., M.D.
Duke Hospital, Durham
(From Section on Ophthalmology and Otolaryngology)

10:00 A.M.—The Need for and Recognition of the General Practitioner.
Wingate M. Johnson, M.D.
Winston-Salem
(From Section on Practice of Medicine and Surgery)

10:20 A.M.—The Treatment of Anemia.
Russel L. Haden, M.D. (by invitation)
Cleveland Clinic
Cleveland, Ohio

11:00 A.M.—The Pathogenesis, Diagnosis and Treatment of the Acute Phase of Poliomyelitis.
William F. Friedewald, M.D.
(by invitation)
Chairman, Department of Bacteriology
Emory University School of Medicine
Atlanta, Ga.

11:30 A.M.—Presenting Winner of 1948 High School Essay sponsored by the Public Relations Committee.

Donald B. Koonce, M.D.
Chairman, Public Relations Committee
Wilmington

11:40 A.M.—Election of three members of the Editorial Board

11:45 A.M.—Awarding of Prizes

(Exhibit Area)

CONJOINT SESSION

(Ball Room)

Wednesday, May 5, 12:00 Noon

S. D. Craig, M.D., Winston-Salem, President of the State Board of Health, will preside over this meeting of the Medical Society of the State of North Carolina and the State Board of Health.

ALUMNI LUNCHEONS

Wednesday, May 5, 1:00 P.M.

University of Pennsylvania—Harry L. Brockmann, M.D., President, High Point (Stag Room)

Jefferson Medical College—Isaac E. Harris, Jr., M.D., President, Durham (Crystal Room)

Tulane Medical College—L. A. Crowell, Jr, M.D., President, Lincolnton (East End of Dining Room)

2:30 P.M.—Second Meeting of House of Delegates
(Small Card Room)

SECTION ON GENERAL PRACTICE OF MEDICINE AND SURGERY

(Ball Room)

Wednesday, May 5, 2:30 P.M.

Panel Discussion on The General Practitioner
G. O. Moss, M.D., Cliffside, Chairman

Problems of Rural Practice
George F. Bond, M.D., Bat Cave

The Role of the General Practitioner in a Program of Adequate Medical Care
J. Street Brewer, M.D., Roseboro

Advantages of Membership in the American Academy of General Practice
Forrest M. Houser, M.D., Cherryville

The Need for and Recognition of the General Practitioner
Wingate M. Johnson, M.D.
Winston-Salem
(Before Second General Session, May 5)

The Sad Plight of the General Practitioner
G. O. Moss, M.D., Cliffside

SECTION ON PEDIATRICS

(Large Card Room)

Wednesday, May 5, 2:30 P.M.

Frederick B. Haar, M.D., Greenville, Chairman

Acute Poisoning in Children.
Jay M. Arena, M.D., Durham
(Before Second General Session, Wednesday, May 5)

Psychiatric Factors in Children with Protracted Illness.
George A. Watson, M.D., Durham

Technique of Breast Feeding.
Frank Howard Richardson, M.D., Asheville

Ratbite Fever.
Carlton G. Watkins, M.D., Charlotte

The Acute Abdomen in Infancy.
William H. Breeden, M.D., Fayetteville

SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY

(Pine Room)

Wednesday, May 5, 1948

W. P. Speas, M.D., Winston-Salem, Chairman

James A. Harrill, M.D., Winston-Salem, Secretary

Lingual Thyroid.
A. A. Dorenbusch, M.D., Charlotte

Selected Neuro-Ophthalmological Disorders.
Henry C. Smith, M.D.
Professor of Ophthalmology
Vanderbilt University
Nashville, Tenn.

Woodman Operation for the Treatment of Bilateral Recurrent Nerve Paralysis—Motion Picture.
Fletcher D. Woodward, M.D.
Professor of Otolaryngology
University of Virginia
Charlottesville, Va.

Plastic Procedures on the Nose and Eyelids—Motion Picture.
Kenneth L. Pickrell, M.D.
Duke University
Durham

External Diseases of the Eye.
Dan S. Currie, Jr., M.D.—Motion Picture.
Duke University, Durham
(Before Second General Session, May 5)

SECTION ON RADIOLOGY

(Dutch Room)

Wednesday, May 5, 1948

J. P. Rousseau, M.D., Chairman, Winston-Salem

Panel Discussion on Radiological Findings in Organic Diseases of the Stomach.

Peptic Ulcer.
Westbrook Murphy, M.D.
James S. Raper, M. D.
Asheville

Carcinoma of the Stomach.
Robert J. Reeves, M.D., Durham
(Before Second General Session, May 5)

Lymphosarcoma.
Joseph Selman, M.D.
Stuart W. Gibbs, M.D.
Winston-Salem

Benign Tumors.
I. Bird, M.D., Greensboro

Infectious Granuloma.
Luther W. Oehlbeck, M.D., Morganton

Gastritis.
W. W. Vaughan, M.D., Durham

THIRD GENERAL SESSION

(Ball Room)

Wednesday, May 5, 1948

5:00 P.M.—Report of House of Delegates

5:15 P.M.—Unfinished Business

5:20 P.M.—New Business

5:30 P.M.—Installation of President-Elect and Vice Presidents, by President James F. Robertson, M.D.

5:40 P.M.—Remarks by President and President-Elect

5:50 P.M.—Adjourn Sine Die

SCIENTIFIC EXHIBITS

Tick Typhus (Rocky Mountain Spotted Fever) in North Carolina.
Bowman Gray School of Medicine of Wake Forest College, Weston M. Kelsey, M.D., Assistant Professor of Pediatrics, and Robert B. Lawson, M.D., Associate Professor of Pediatrics, Winston-Salem.

Disability Evaluation of the Forearm and Hand.
Baruch Center of Physical Medicine, Medical College of Virginia, F. A. Hellebrandt, M.D., Director, Richmond, Va., Walter J. Lee, M.D., Associate Professor of Physical Medicine, Miss Helen V. Skowlund, Research Associate, Baruch Center of Physical Medicine, Richmond, Va., Miss Judith M. Blue, Research Assistant, Baruch Center of Physical Medicine, Richmond, Va.

Vaginal Cervical Smear in the Diagnosis of Uterine Cancer.
William Bickers, M.D., Medical Arts Building, Richmond, Va.

Streptomycin in Urinary Tract Infections.
Bowman Gray School of Medicine of Wake Forest College, Fred K. Garvey, M.D., and George T. Harrell, M.D., Winston-Salem.

Muscle Testing Techniques in Poliomyelitis.
National Foundation for Infantile Paralysis, Mr. P. S. Randolph, State Representative, Chapel Hill.

Lung Abscess.
Roy G. Klepser, M.D., F.A.C.S., Associate in Thoracic Surgery, Georgetown University Medical School, Washington, D. C.

The Menace of the Rat.
Thomas G. Hull, American Medical Association, Chicago, Ill.

Certain Painful Orthopedic Conditions and Treatment by Sympathetic Block.
Bowman Gray School of Medicine of Wake Forest College, R. A. Moore, M.D., H. F. Forsyth, M.D., P. H. Dillard, M.D., and E. W. Schafer, M.D., Winston-Salem.

Treatment of Inoperable Breast Carcinoma with Testosterone.
Howard W. Jones, M.D., and Grant E. Ward, M.D., Johns Hopkins Medical School, Baltimore, Md.

Management of Tongue Cancer.
Grant E. Ward, M.D., Arthur G. Sinwinski, M.D., Howard W. Jones, M.D., and John O. Robben, M.D., Johns Hopkins Medical School, Baltimore, Md.

The Control of Cancer.
N. C. Division The American Cancer Society, Thomas L. Lee, M.D., Chairman, Cancer Committee, Medical Society of the State of North Carolina, Kinston.

Cytologic Test for Cancer.
The Cancer Control Branch, National Cancer Institute, George N. Papanicolaou, Cornell University Medical College, New York.

Management of Venereal Disease in General Practice.
Venereal Disease Division, U. S. Public Health Service and N. C. State Board of Health.

Old and Modern Moulages Depicting Diseases of the Female Generative Tract.
J. Mason Hundley, Jr., M.D., Professor of Gynecology; Beverly C. Compton, M.D., Associate Professor of Gynecology, School of Medicine, University of Maryland, Baltimore, Md., and Theodore Kardash, M.D., Resident in Gynecology, University Hospital, Baltimore, Md.

Prevention of Deafness; Irradiation of Adenoids.
Alfred T. Lieberman, M.D., and Donald F. Proctor, M.D., Department of Otolaryngology, Johns Hopkins Hospital, Baltimore, Md.

Treatment of Congenital Flat Feet.
J. E. M. Thomson, M.D., Lincoln, Neb., and Frederick S. Webster, M.D., Orthopaedic Department, Duke Hospital, Durham, N. C.

TECHNICAL EXHIBITORS

A. S. Aloe Co., St. Louis, Mo., spaces 69 and 70
Baker Laboratories, Inc., Cleveland, Ohio, space 87
Bilhuber-Knoll Corporation, Orange, N. J., spaces 65 and 66
Borden Company, New York, spaces 57 and 58
Camel Cigarettes, New York, spaces 35, 36, 37 and 38
Ciba Pharmaceutical Products, Inc., Summit, N. J., spaces 71 and 72
Commercial Casualty Insurance Co., Durham, space 8
Davies, Rose & Co., Boston, Mass., space 39
Doak Company, Inc., Hyattsville, Md., spaces 75 and 76
Doho Chemical Corporation, New York, spaces 9 and 10
Drug Specialties, Inc., Winston-Salem, space 49
Eli Lilly and Co., Indianapolis, Ind., spaces 59 and 60
Endo Products, Inc., Richmond Hills, N. Y., space 80
Fellows Medical Manufacturing Co., New York, space 102
C. B. Fleet Co., Inc., Lynchburg, Va., space 47
General Electric X-Ray Corporation, Charlotte, spaces 83 and 84
J. E. Hanger of North Carolina, Inc., Raleigh, spaces 97 and 98
Charles C. Haskell & Co., Inc., Richmond, Va., spaces 67 and 68
Hoffman-LaRoche, Inc., Nutley, N. J., spaces 81 and 82
Holland-Rantos Co., Inc., New York, spaces 91 and 92
Lanteen Medical Laboratories, Inc., Chicago, Ill., spaces 44 and 45
Lederle Laboratories, N. Y., spaces 61 and 62
Liebel-Flarsheim Co., Cincinnati, Ohio, spaces 95 and 96
J. B. Lippincott Co., Philadelphia, Pa., spaces 89 and 90
M & R Dietetic Laboratories, Inc., Columbus, Ohio, space 77
Mead Johnson & Co., Evansville, Ind., space 40
Merck & Co., Rahway, N. J., spaces 6 and 7
Wm. S. Merrell Co., Cincinnati, Ohio, spaces 73 and 74
Ortho Pharmaceutical Corporation, Linden, N. J., spaces 55 and 56
Parke, Davis & Co., Detroit, Mich., spaces 53 and 54
Philip Morris & Co., New York, spaces 13 and 14
Picker X-Ray Corporation, Charlotte, N. C., spaces 103, 104 and 105
Powers and Anderson of North Carolina, Winston-Salem, N. C., space 17
Wm. P. Poythress & Co., Inc., Richmond, Va., spaces 78 and 79
L. & B. Reiner, New York, space 48
S. & H. X-Ray Corporation, Charlotte, space 114
W. B. Saunders Co., Philadelphia, spaces 115 and 116
G. D. Searle & Co., Chicago, Ill., spaces 15 and 16
Sharpe and Dohme, Inc., Philadelphia, Pa., spaces 85 and 86
E. R. Squibb & Sons, New York, spaces 11 and 12
Tablerock Laboratories, Greenville, S. C., space 46
U. S. Vitamin Corporation, New York, space 43
VanPelt & Brown, Inc., Richmond, Va., spaces 63 and 64
Westinghouse Electric Co., Greensboro, N. C., spaces 93 and 94
White Laboratories, Inc., Newark, N. J., spaces 4 and 5
Winchester Surgical Supply Co., Charlotte, spaces 1, 2, 3, and 50, 51 and 52
Winthrop-Stearns, Inc., New York, spaces 41 and 42
Wyeth, Incorporated, Philadelphia, Pa., space 88
Zimmer Manufacturing Co., Charlotte, space 101

BULLETIN BOARD

(CONTINUED FROM PAGE 218)

North Carolina Branch of the American Academy of General Practice

The North Carolina Branch of the American Academy of General Practice will meet at the Theater in Pinehurst on Sunday, May 2, at 3 p.m. Dr. John R. Bender, president, urges that all general practitioners who are members of the Medical Society of the State of North Carolina attend this meeting.

News Notes from the State Board of Health

Dr. John William Roy Norton was elected North Carolina State Health Officer at a meeting of the State Board of Health called to select a successor to Dr. Carl V. Reynolds, who will retire June 30, 1948.

Dr. Norton completed the first two years in medicine at the University of North Carolina Medical School in 1926, and received his M.D. degree from Vanderbilt University Medical School in 1928. He received the degree of Master of Public Health from Harvard University in 1936, and from 1936 to 1938 was a member of the staff of the State Board of Health. In September, 1938, he was made professor of public health administration in the University of North Carolina School of Public Health, and served in that capacity until November, 1940.

He then entered the United States Army with the rank of captain. After about three years' service abroad, and several months' service at home, he was discharged with the rank of lieutenant-colonel. Since that time, he has been with the TVA with headquarters at Chattanooga, Tennessee.

News Notes from the North Carolina Tuberculosis Association

The annual meeting of the North Carolina Tuberculosis Association will be held at the Sir Walter Hotel in Raleigh on May 17 and 18. Dr. H. F. Easom of Wilson is chairman of the program committee.

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The North Carolina Tuberculosis Association will cooperate with the National Tuberculosis Association again this year in making available fellowships for the summer session at the University of Michigan School of Public Health. These fellowships are offered to Negro nurses, teachers, principals, and social workers.

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Dr. Max Pinner, editor of the **American Review of Tuberculosis**, died at his home in Berkeley, California, on January 7.

Greensboro Academy of Medicine

North Carolina physicians taking part in the medical symposium sponsored by the Greensboro Academy of Medicine and held in Greensboro on March 18 included Dr. James H. McNeill of North Wilkesboro, Drs. R. L. Wall and H. H. Bradshaw of Winston-Salem, Drs. R. A. Ross and Edward S. Orgain of Durham, and Dr. J. F. Robertson of Wilmington. The speakers for the symposium were Dr. Robert A. Hingson, Dr. Emil Novak, Dr. Tinsley Harrison, Dr. W. Emory Burnett, and Dr. Edward Weiss. Dr. H. C. Lennon is president of the Greensboro Academy of Medicine.

News Notes from the Bowman Gray School of Medicine of Wake Forest College

Dr. George T. Harrell, Jr., director of the department of internal medicine of the Bowman Gray School of Medicine, and Dr. W. C. Davison, dean of the Duke University School of Medicine, have been elected members of the six-man executive medical board to formulate the research policy and clinical program to be undertaken at the Oak Ridge Hospital in Oak Ridge, Tenn. They were among the eleven doctors representing various Southern medical colleges who were nominated for the position at a meeting held in Oak Ridge March 1 and 2. The Atomic Energy Commission will take steps to initiate immediately a program of providing facilities at the Oak Ridge Hospital for research in the treatment of leukemias and other malignant diseases, using short-lived radio-isotopes directly from the nuclear reactor there.

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Dr. Angus Crawford Randolph, former resident psychiatrist at the Veterans Hospital, Perry Point, Maryland, has joined the staff of the department of neuropsychiatry as senior resident in psychiatry at Graylyn. A native of Lexington, Virginia, Dr. Randolph is a graduate of Princeton University and the University of Virginia Medical School. He has held a fellowship in preventive medicine at Johns Hopkins and served in the psychiatric outpatient department there since being discharged from the medical corps of the army air force.

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Recent grants made to the Bowman Gray School of Medicine include:

A grant of $1,000 from the executive committee of the North Carolina division of the American Cancer Society to pay for a refresher course in cancer for physicians in the state.

Two grants totaling $31,300 from the National Cancer Institute of the U. S. Public Health Service. One grant of $24,900 is to aid in cancer teaching under the direction of Dr. R. P. Morehead, head of the department of pathology. The other grant of $6,400 is for the establishment of a follow-up service on tumors received from approximately forty hospitals in North Carolina.

A grant of $5,950 from the National Advisory Health Council of the U. S. Public Health Service for study of the formation of phospho-lipids by the liver in cirrhosis of the liver. Radioactive materials from the atomic pile are being used in this study. Dr. Camillo Artom and Dr. W. E. Cornatzer of the department of biochemistry have been experimenting with animals in this research. Dr. David Cayer of the department of medicine, in collaboration with Dr. Cornatzer, will apply the study to human patients.

Another grant of $8,100 from the National Advisory Health Council in support of research already under way in the department of medicine on factors concerned with resistance built up by the human body to chemotherapy.

A terminal grant of $8,400 awarded to the department of physiology and and pharmacology in support of research being conducted by Dr. Harold D. Green and Dr. J. Maxwell Little in the field of peripheral vascular circulation. The grant is from the Life Insurance Medical Research Fund and is to extend for one year, beginning July 1,1948. The department received a similar grant of $6,800 from the Fund for work in the same field last year.

Dr. Cecil K. Drinker of Boston, Massachusetts, professor of physiology at Harvard University and dean of the School of Public Health, spoke on the "Function of the Peritoneum" at the meeting of the Bowman Gray Medical Society on March 22.

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Dr. Douglas M. Kelley, president of the Rorschach Society, attended meetings of the Society at Vanderbilt University, Nashville, Tenn., April 10 to April 14.

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Dr. Frank Lock, head of the department of obstetrics and gynecology, discussed "Anesthetic Deaths in Obstetrics" at the meeting of the South Carolina Obstetric and Gynecologic Society in Camden, South Carolina on April 3.

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Members of the staff of the Bowman Gray School of Medicine are continuing during April a series of lectures and clinics in the postgraduate course for the Veterans Administration hospital at Mountain Home, Tenn. The speakers for April are Dr. Elbert MacMillan, Dr. E. O. Jeffreys, Dr. Robert B. Lawson, Dr. C. M. Norfleet, Dr. G. T. Harrell, Dr. Felda Hightower, Dr. H. F. Forsyth, Dr. W. M. Kelsey, Dr. R. W. Postlethwaite, and Dr. W. E. Cornatzer. The series of lectures began in February and will continue through May and June.

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Dr. Wingate M. Johnson, professor of clinical medicine, spoke at the Annual Secretaries' Conference of the West Virginia State Medical Association, held in Charleston on March 14. His subject was "Postgraduate Education for the General Practitioner."

News Notes from the Duke University School of Medicine

Course in Medical Mycology

A month's course in Medical Mycology, under the direction of Dr. Norman F. Conant, is to be offered at Duke University School of Medicine and Duke Hospital, Durham, June 28-July 30. The course will be offered every day in the week, except Sunday, and has been designed to insure a working knowledge of the human pathogenic fungi within the time allotted.

A fee of $50.00 will be charged for this course, upon completion of which a suitable certificate will be awarded. Please direct inquiries to Dr. Norman F. Conant, Duke University School of Medicine, Durham, N. C.

A more detailed announcement concerning this course appeared in the **North Carolina Medical Journal** for January.

Edgecombe-Nash Counties Medical Society

Dr. K. D. Weeks of Rocky Mount was speaker at the March meeting of the Edgecombe-Nash Counties Medical Society, held in Rocky Mount on March 10. His subject was "Congenital Heart Disease."

Forsyth County Medical Society

A dinner meeting of the Forsyth County Medical Society was held in Winston-Salem on March 9. Dr. C. Bruce Morton, II, of the Department of Surgery, University of Virginia, spoke on gallbladder disease.

Halifax County Medical Society

A moving picture from the library of the American Medical Association was shown to the Halifax County Medical Society at its regular monthly dinner and meeting, held on March 12 in Roanoke Rapids. The title of the movie was "Physical Diagnosis of Unusual Endocrine Cases."

Jefferson Medical Alumni

Dr. George T. Wood of High Point, who has recently been elected vice president of the Alumni Association of the Jefferson Medical College for the state of North Carolina, has asked that Jefferson alumni send him information regarding their own activities or those of other Jefferson alumni in the state. The Association is particularly anxious to know of changes of address and deaths among its members.

The Royster Club

The Royster Club is the title of an organization recently formed by a group of the younger physicians in Raleigh. It is named in honor of Dr. Hubert A. Royster, retired surgeon, who is the honorary president and takes an active interest in the club. Meetings are held monthly, each member in turn acting as host. The Club is devoted to medical research, the presentation of original work, and the discussion of advanced scientific knowledge. The various specialties are represented in its membership, which at present is limited to eighteen in number.

News Notes

Dr. Reuben A. McBrayer died of a coronary thrombosis at his home in Southern Pines on February 21.

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Dr. E. C. Clayton has opened offices for the general practice of medicine in Asheville.

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Dr. John Carroll Wiggins, Jr., has announced the opening of offices for the practice of internal medicine in Winston-Salem.

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Dr. Robert L. Garrard has recently returned to Greensboro to resume the private practice of neurology and psychiatry. He will be associated with Drs. Smith, Stevens, Harrill, Brown, Apple, and Barefoot, and will in addition be consultant to the Veterans Administration, Neuropsychiatric Division, Winston-Salem, and consultant psychiatrist at the Woman's College of the University of North Carolina.

Dr. Garrard left Greensboro to enter military service in July, 1942. Since being separated from service in April, 1946, he has served as director of the neuropsychiatric division of the Charles V. Chapin Hospital in Providence, Rhode Island, and later as director of the V. A. Mental Hygiene Clinic in Providence.

American Hearing Society

Beginning April 1, 1948, the American Hearing Society, which has been housed for twenty-five years in the Volta Bureau Building, 1537 35th Street, Northwest, will be occupying quarters at 817 14th Street, Northwest, Washington 5, D. C.

Southern Pediatric Seminar

The twenty-eighth annual session of the Southern Pediatric Seminar, reorganized under a Board of Directors since the death of its founder, Dr. D. L. Smith, Sr., will be held in Saluda, North Carolina, July 5-17, 1948. Officers of the Seminar are Dr. S. F. Ravenel, dean; Dr. F. H. Richardson, vice dean; and Dr. M. W. Beach, vice dean elect. The following faculty has been elected by the Board of Directors: S. F. Ravenel, F. H. Richardson, O. H. Wilson, J. L. Ward, Lee Bivings, A. M. McBryde, R. M. Pollitzer, W. C. Davison, J. M. Arena, K. M. Lynch, J. W. White, P. A. Mulherin, W. W. Quillian, Hines Roberts, M. W. Beach, D. L. Smith, Jr., J. P. Price, Robert Lawson, Amos Christie, Ambrose McGee, G. D. Johnson, Hughes Kennedy, K. H. Smith, G. W. Wilkinson, Oren Moore, O. L. Miller, W. L. Funkhouser, L. W. Holloway, R. W. McKay.

The Board of Directors includes the following members from North Carolina: Dr. J. LaBruce Ward of Asheville, Dr. W. C. Davison of Durham, and Dr. Robert Lawson of Winston-Salem.

Information concerning registration for the 1948 session may be obtained from Dr. M. A. Owings, secretary-treasurer, Saluda, N. C. The registration fee is $25.00.

Veterans Administration

Under a program just announced by the Veterans Administration, young North Carolina physicians who have finished residency training may now complete the requirements for their specialty board examinations through supervised practice as full-time staff members in VA hospitals. Initial salaries range from $4,149 to $7,102 a year.

Oteen and Fayetteville VA Hospitals have openings at present, and there are other vacancies in VA hospitals at Perry Point, Md.; Martinsburg, W. Va.; Huntington, W. Va.; Kecoughtan, Va.; and Roanoke, Va.

To qualify for a position under this program, a physician must have completed three years of residency training in medicine, surgery or neuropsychiatry at an approved institution. These posts have been available heretofore to men finishing courses at VA hospitals but are being offered for the first time to those trained in other institutions.

Doctors wishing more detailed information or those wishing to file applications should communicate with the Branch Medical Director, Veterans Administration, 900 N. Lombardy Street, Richmond 20, Va. Meanwhile, they are welcome to visit any of the hospitals named and consult the manager about opportunities.

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Appointment of Dr. Harvey J. Tompkins of Arlington, Va., as head of the neuropsychiatric service in Veterans Administration Department of Medicine and Surgery, was announced recently by Dr. Paul B. Magnuson, chief medical director. Dr. Tompkins succeeds Dr. Daniel Blain, who has resigned to accept the position of medical director of the American Psychiatric Association. Dr. Blain has been chief of VA's neuropsychiatric service since November, 1945. He will continue to serve VA's chief medical director in an advisory capacity.

American Physiotherapy Association

The annual conference of the American Physiotherapy Association will be held at the LaSalle Hotel in Chicago, May 23-28.

American College of Surgeons Approves Use of Nurse Anesthetists

The Board of Regents of the American College of Surgeons, at a meeting on February 22, adopted a resolution commending the services of nurses who have had special training in the administration of anesthesia and recommending the continuance of training courses in this field for nurses. The resolution reads as follows:

"The American College of Surgeons regards with deep concern the actions of some physician anesthesiologists in giving the impression to the laity in the public press that it is unsafe for experienced nurse anesthetists to conduct surgical anesthesia. While it supports the increasing tendency of physician anesthesiologists in charge of surgical anesthesia, it deplores at this time any propaganda for the elimination of the trained nurse anesthetist. On the contrary, the American College of Surgeons is of the opinion that, in view of the inadequacy in number of the physician anesthesiologists and in view of the splendid record of achievement of the nurse anesthetists, institutions engaged in the training of nurses for this purpose should be encouraged to continue their programs."

National Gastroenterological Association

The National Gastroenterological Association will hold its thirteenth scientific session at the Hotel Pennsylvania in New York City on June 7-10, 1948. The program for the first three days will be at the Hotel Pennsylvania and will consist of symposia on gastroduodenal ulcer, ulcerative colitis, jaundice, and metabolism, nutrition and allergy. The panel discussion, which will be followed by a "question and answer" period, will cover the topics of diabetic, tubercular, psychosomatic and cardiac manifestations in gastrointestinal diseases. The fourth day of the session will be devoted to a clinical day at cooperating hospitals in New York City.

Further details and a copy of the program may be obtained by writing to the Secretary, National Gastroenterological Association, 1819 Broadway, New York 23, New York.

American College of Chest Physicians

The Board of Examiners of the American College of Chest Physicians announces that the next oral and written examinations for Fellowship will be held at Chicago, June 17, 1948. Candidates for Fellowship in the College, who would like to take the examinations, should write the Executive Secretary, American College of Chest Physicians, 500 North Dearborn Street, Chicago 10, Illinois.

The fourteenth annual meeting of the American College of Chest Physicians will be held at the Congress Hotel, Chicago, Illinois, June 17-20, 1948. An interesting scientific program has been arranged for this meeting, and speakers from several other countries are scheduled to appear.

International Short Wave Congress

The sixth international short wave congress will be held in Amsterdam, July 19-24, 1948. Further information may be obtained from the secretary, Dr. J. Samuels, Weteringschans 73, Amsterdam, Holland.

International Society of Hematology

The International Society of Hematology will hold its bi-annual meeting at the Hotel Statler, in Buffalo, New York, August 23-26, 1948. Applications for the presentation of scientific exhibits are now being received by Dr. O. P. Jones, Department of Anatomy, University of Buffalo, Buffalo, New York. Chairman of the Program Committee is Dr. Ernest Witebsky, Buffalo General Hospital, Buffalo, New York.

All scientific sessions and exhibits will be open to scientists interested in hematology. Communications and applications concerning membership from this country will be received by Dr. William Dameshek, 25 Bennett St., Boston, Massachusetts. Those interested in attending the meeting may communicate with Dr. Sol Haberman, Secretary, The William Buchanan Blood Center, Baylor Hospital, Dallas, Texas.

News Notes from the Office of the Surgeon General

U. S. Army Passes Through Winter with Best Health on Record

The United States Army was in better health throughout the past winter than during any like period in past years for which comparable statistics are available, it was announced recently by the Army Medical Department.

Strictly comparable figures for the past quarter-century disclose an average January hospital admission rate in the Army of a little over 14 per 1000 troops per week, while the weekly rate for January, 1948, was 9.4 per 1000. The February, 1948, rate was 50 per cent lower than the average for the past twenty-five years; the rate this year was approximately 10½ cases of illness per 1000 troops per week, while the twenty-five year average was about 15½ per week.

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New Professional Training Opportunities Offered Army Doctors

A revised and greatly expanded professional training program for regular Army and Reserve Medical Officers has been announced by Major General Raymond W. Bliss, Surgeon General of the Army. In line with the policy of providing in the U. S. Army the highest standard of medical care in the world, the program calls for 1900 new doctors in the Regular Army and an increasing number of volunteer Reserve officers on active duty. The program is designed to give many more Army doctors the training needed to meet the requirements for certification by the American Specialty Boards, and to further integrate civilian and military medicine.

Information concerning any part of the program may be obtained from the Surgeon General's Office. Address requests to the attention of the Chief of Personnel, SGO, Department of the Army, Washington, D. C.

The National Society for Crippled Children and Adults, Inc.

Latest medical knowledge on the causes and treatment of cerebral palsy is contained in "The Problem of Cerebral Palsy Today," a 57-page booklet written by Dr. Meyer A. Perlstein, one of the nation's foremost pediatricians.

Copies of the booklet can be obtained from the National Society for Crippled Children and Adults, Inc., 11 S. La Salle Street, Chicago 3, Illinois, at 25 cents each.

Classified Advertisements

ASSOCIATE WANTED

WANTED: A young or middle-aged eye, ear, nose and throat specialist as an associate in a well established practice.

Address replies to Box 292, Wilson, N. C.

ASSOCIATE WANTED

WANTED: An associate in a busy eye, ear, nose and throat practice in central North Carolina. Opportunity, work, and financial returns unlimited.

Address "B"
Post Office Box 456
Winston-Salem, N. C.

ASSOCIATION WITH SURGEON DESIRED

North Carolina native and graduate of the University of Virginia, aged 34, with three years approved training in general surgery and one year in general practice, a veteran, desires association with established surgeon.

Address "G"
Post Office Box 456
Winston-Salem, N. C.

FOR SALE

TUBERCULOSIS SANATORIUM, well established, suburban Asheville location. Frame construction. Twenty rooms, nine sun porches, five baths, running water in every room. Forty-patient capacity. Completely furnished, including linens. Price $21,000. Terms.

NURSING HOME in quiet residential district of Asheville. Brick construction. Completely furnished. Ten bedrooms, three baths, full attic, large porch. Price $21,000. Terms.

Offered by Fidelity Business Brokers, Inc.,
Lobby Jackson Building,
Asheville, N. C., Phones 3166 - 5156

FOR SALE

Lake Lure, North Carolina

Charming mountain retreat in beautiful Blue Ridge, suitable for physician or patient seeking peace and quiet. One story, rambling house with 3½ acres finest woodland and ravines. Three bedrooms, three baths, vaulted living room, huge stone fireplace, dining room, modern kitchen, screened porch, luxurious closet space, knotty pine interior. Concrete basement, oil furnace, hot water heater, laundry tubs. Suitable year-round. In best repair. Price, $19,000.

For further details address:
Office of Business Manager, North Carolina Medical Journal, Red Springs, N. C.

AUXILIARY

TWENTY-FIFTH ANNUAL MEETING OF THE AUXILIARY TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

RULES AND PROCEDURE

1. Register on arrival and receive badge. ($1.00—fifty cents for Auxiliary expense and dues to Auxiliary of A.M.A., and fifty cents for upkeep of three beds at State Sanatoria maintained for doctors, doctors' families, nurses, children, others, preference in order given—fee for all who do not present current membership card.) Wear badge to all functions.
2. Register for Bridge Party.
3. Secure Luncheon Ticket.

PROGRAM

Monday, May 3rd

8:30 P. M. Bingo Party—Pine Room—Mrs. Geo. Heinitsh, Chairman

For men and women—50 cents per card

Balance cleared will go to Auxiliary Bed Fund

Tuesday, May 4th

9:00 A.M. Executive Board Meeting—Pine Room

10:30 A.M. Annual Meeting—Pine Room

1:00 P.M. Silver Anniversary Luncheon—Pinehurst Country Club—Mrs. W. F. Hollister, Chairman

Carolina and Holly Inn luncheon tickets will be accepted. Those not registered at these hotels may purchase tickets before 11:00 A.M. at Carolina Hotel Desk. Transportation to club furnished.

4:00 P.M. Tea—West Parlor—Mrs. Thos. N. Lide, Chairman

Honoring 1. Mrs. W. Reece Berryhill
2. Mrs. Raymond Thompson
3. Mrs. J. F. Robertson
4. Past Presidents

7:00 P.M. Medical Society Banquet

10:00 P.M. Medical Society Ball

Wednesday, May 5th

10:00 A.M.—Bridge Party—(Large Card Room)—Mrs. R. M. McMillan, Chairman

GENERAL MEETING

Tuesday, May 4—10:30 A.M.

Pine Room

Mrs. W. Reece Berryhill, President, Presiding

PROGRAM

Call to Order ..... Mrs. W. Reece Berryhill, Chapel Hill

Invocation ..... Mrs. P. P. McCain, Southern Pines

Address of Welcome ..... Mrs. H. E. Bowman, Aberdeen

Response ..... Mrs. Ben Lawrence

Memorial Service ..... Mrs. H. H. Foster, Norlina

Reports of Executive Officers

First Vice-President
Chmn. of Organization ..... Mrs. Frederick Taylor, High Point
Second Vice-President
Chairman of Activities ..... Mrs. Watson Roberts, Durham
Corresponding Secretary ..... Mrs. Fred Patterson, Chapel Hill
Recording Secretary ..... Mrs. David Cayer, Winston-Salem
Treasurer ..... Mrs. E. C. Judd, Raleigh
President ..... Mrs. W. Reece Berryhill, Chapel Hill

Report from Chairman of Advisory Board ..... Dr. Rachel Davis, Kinston

Report of Chairman of Revision Committee ..... Mrs. J. Buren Sidbury, Wilmington

Greetings from Medical Society of the State of North Carolina ..... Dr. J. F. Robertson, Wilmington

Presentation of Davis Cup

Unfinished Business

New Business

Election of Delegate to National Auxiliary
Report of Nominating Committee ..... Mrs. George Carrington, Burlington
Installation of Officers ..... Mrs. P. P. McCain, Southern Pines
Presentation of Gavel
Inaugural Remarks ..... Mrs. Raymond Thompson, Charlotte

Announcements

Adjournment

MOORE COUNTY AUXILIARY HOSTESSES

Mrs. H. E. Bowman ..... Aberdeen, President
Mrs. A. A. Vanore ..... Robbins, Vice-President
Mrs. Thos. N. Lide ..... Southern Pines, Sec.-Treas.
Mrs. P. P. McCain ..... Southern Pines, General Chairman
Mrs. J. S. Milliken ..... Southern Pines
Mrs. R. M. McMillan ..... Southern Pines
Mrs. Wm. F. Hollister ..... Southern Pines
Mrs. George Heinitsh ..... Southern Pines
Mrs. Reuben MacBrayer ..... Southern Pines
Mrs. M. I. Pishkoe ..... Southern Pines
Mrs. R. G. Rosser ..... Vass
Mrs. C. E. Brady ..... Robbins
Mrs. W. M. Marr ..... Pinehurst
Mrs. W. C. Mudgett ..... Pinehurst
Mrs. J. C. Grier ..... West End

CORRECTION

The name of Mrs. R. A. Herring of High Point, a member-at-large, was inadvertently omitted from the roster of members which appeared in the September issue of the NORTH CAROLINA MEDICAL JOURNAL.

BOOK REVIEWS

Ovarian Tumors, an independent unit of the loose-leaf **Encyclopedia of Endocrinology**. By Hans Selye, M.D., Ph.D. (Prague), D.Sc. (McGill), F.R.S. (Canada), Professor and Director of the Institute of Experimental Medicine and Surgery, University of Montreal. 2 volumes, amply illustrated. Price, $21.75. Montreal, Canada: Richardson, Bond and Wright, Publishers, 1946.

In the monumental **Encyclopedia of Endocrinology** prepared by Dr. Selye, two volumes on the subject of ovarian tumors appear. They may be purchased independent of the complete set of books.

These volumes represent a complete review of the world literature on this important subject. One volume of 427 pages is required for compiling and accurately cataloguing more than 33,000 references on ovarian tumors.

The organization of the text is clear and concise, and one may learn without difficulty the information which is available in the literature relative to any question concerning benign or malignant ovarian neoplastic diseases. The subject index covers each major subject, and further minute sub-indices permit immediate reference to the page and section of the text dealing with any subject. The terminology used and the organization of material differs slightly from that usually found in the American texts. However, no difficulty in identifying the subject matter results, since all synonymous terms are listed.

Each section presents a complete analysis of available knowledge on the subject. For example, the section on "Ovarian Common Carcinomas" includes subdivisions on synonyms, references to all major reviews of the subject which have appeared in English, French, German, Italian, and Spanish, definitions, history, classification, pathologic anatomy, chemical composition, incidence, pathogenesis, clinical course, complications, diagnosis, prognosis, and therapy.

These volumes represent the outstanding recent contribution in the field of ovarian disease. They combine the features of a practical working source of information with an invaluable reference book. It is impossible to indicate the scope of this fine work, which can be recommended without reservation.

Gynecology with a section on **Female Urology**. By Lawrence R. Wharton, Ph.B., M.D., Assistant Professor of Gynecology, The Johns Hopkins Medical School; Assistant Attending Gynecologist, The Johns Hopkins Hospital; Consultant in Gynecology, The Union Memorial Hospital, Hospital for the Women of Maryland, Sinai Hospital and Church Home and Infirmary. Ed. 2. 1027 pages, with 479 illustrations. Price, $10.00. Philadelphia and London: W. B. Saunders Company, 1947.

Dr. Wharton has enlarged and improved his fine book on gynecology and female urology in this second edition. He has brought his subjects up to date, and each one is clearly and fully described. No extraneous material is included. His second chapter on congenital malformations and their management is excellent and easily understood.

The section on endocrinology presents the factual information which is now available to us relative to normal sexual endocrinology of the female and the frequent abnormalities which are encountered in practice. The discussion of their management is clear and to the point.

The section on pelvic infection is excellent. The author points out that conservative treatment is invariably indicated in acute pelvic infections, and carefully and clearly outlines the plan of therapy which should be instituted. The discussion of chronic inflammatory disease gives a good presentation of the accepted procedure in the management of these conditions.

The section on leukorrhea and vaginal infections outlines a specific approach to the diagnosis of the offending organism and describes various specific agents which may be used for treatment.

The chapters on cervical disease are greatly improved. Carcinoma of the cervix is given consideration, and greater emphasis is placed upon the early diagnosis of cervical malignancies. The author states that a biopsy should be taken before any treatment is begun for cervical disease of any type. The discussion of the treatment of carcinoma of the cervix is a careful collection and presentation of the present opinion. Irradiation and operation are discussed at some length, and the advantages and disadvantages of various forms of therapy are given an unprejudiced review.

The section of the book dealing with female urology contains a new chapter on water cystoscopy in the female prepared by Dr. Charles L. Prince, in addition to the chapters on air cystoscopy using the Kelly technique. A short but excellent chapter on the relationship between the urinary and reproductive organs in women is included.

This new edition of Dr. Wharton's text is highly recommended.

Applied Medical Bacteriology. By Max S. Marshall, Ph.D., Division of Bacteriology, Medical Center of the University of California, San Francisco, California. 340 pages. Price, $4.50. Philadelphia: Lea & Febiger, 1947.

The author has made an outstanding contribution to the student and clinician in this well written, up-to-date presentation of medical bacteriology. The application of this science is made clearly evident by a brief and concise integration of the fundamentals of bacteriology with the epidemiology, pathology, and symptomatology of the infectious diseases.

The first part of the book deals with practical techniques, including those which are essential for public health control. Two valuable chapters on biologic products and methods of collection and shipment of specimens follow. The remainder of the text deals with approximately sixty-five infectious diseases and outlines specific serologic and bacteriologic methods useful in the diagnosis of each. The constant use of cross-indexing adds to readability by eliminating unnecessary repetition.

This book is highly recommended to the medical student, public health officer, and practitioner. In addition, it should serve as a valuable broadening supplement for the technician or student of bacteriology.

A Manual of Clinical Therapeutics — A Guide for Students and Practitioners. By Windsor C. Cutting, M.D., Professor of Therapeutics, Stanford University School of Medicine, San Francisco, California. Ed. 2. 712 pages, with 30 illustrations. Price, $5.00. Philadelphia and London: W. B. Saunders Company, 1948.

The second edition of the **Manual of Clinical Therapeutics** should prove to be of considerable value for medical students, house officers, and practitioners of general medicine. As Dr. Cutting stated in the preface of his book, these are the groups for whom it was primarily intended.

The manual is not a substitute for the more detailed texts of pharmacology and therapeutics, but is a concise, pocket-sized guide to specific medical treatments.

This edition includes the many significant improvements in therapy which have been introduced within the past four to five years. The newer antibiotics, vitamins, and antihistamine, antithyroid and antimalarial drugs are among the many subjects which have been added since the first edition. Specific references to the current literature have been cited in connection with the treatment of each disease process.

The manual is necessarily succinct, but space has been allotted to a clinical description of each syndrome.

Of especial value are the nine appendices, which include sections on diets, physiotherapy, prescriptions, poisons, dosages, height and weight charts, and techniques of the more common diagnostic procedures and of drug and fluid administration.

The Foot and Ankle. By Philip Lewin, M.D., F.A.C.S., Associate Professor of Bone and Joint Surgery, Northwestern University Medical School; Professor of Orthopaedic Surgery, Postgraduate Medical School of Cook County Hospital; formerly Colonel, Medical Corps, Army of United States. Ed. 3. 847 pages. Price, $11.00. Philadelphia: Lea and Febiger, 1947.

The third edition of Lewin's book has been thoroughly revised and includes the latest material about chemotherapy, circulatory lesions, bone grafting, and plastic procedures as they apply to the foot and ankle. The author has drawn heavily on his valuable experience in World War II in bringing this extensive work up to date.

The book is meant to serve as a guide to the student, general practitioner, industrial surgeon, and orthopedic surgeon in the diagnosis and treatment of conditions in the foot and ankle. It is too detailed for practical purposes, however, unless one is primarily concerned with these conditions.

There is no aspect of the subject that has not been thoroughly covered. Three hundred and eighty-nine admirable illustrations make the descriptive material very easy to understand.

One should know the author to appreciate the philosophy which is sprinkled generously throughout.

Pharmakologie als Theoretische Grundlage Einer Rationellen Pharmakotherapie. By Knud O. Moeller. 744 pages. Basel, Switzerland: Benno Schwabe and Co., 1947; imported by Grune & Stratton, Inc., New York.

The author of this text is professor of pharmacology in the University of Copenhagen. His book is comprehensive and exceptionally modern, considering the difficulties under which it was written. Its value is increased by an extensive bibliography which is especially rich in European references.

The appeal of this text to students of the United States is considerably decreased by the fact that it is written in German. Nevertheless, to one familiar with German it is apparent that the style is very clear and simple. The book will be interesting and valuable to those who have a reading knowledge of German or to those students who would like to acquire such a knowledge.

Pharmacology, Therapeutics and Prescription Writing — For Students and Practitioners. By Walter Arthur Bastedo, Ph.G., Ph.M. (Hon.), M.D., Sc.D. (Hon.), F.A.C.P., Consulting Physician, St. Luke's Hospital, N. Y.; St. Vincent's Hospital, Staten Island, and the Staten Island Hospital; President, U.S.P. Convention 1930-40; Member Revision Committee, U.S.P. Formerly Curator of the N. Y. Botanical Garden; Attending Physician, City Hospital, N. Y.; Instructor in Pharmacology, Cornell University; Associate in Pharmacology and Therapeutics and Assistant Clinical Professor of Medicine, Columbia University. Ed. 5. 840 pages, with 82 illustrations. Price, $8.50. Philadelphia and London: W. B. Saunders Company, 1947.

This is the fifth edition of a book which is well known to many generations of medical students. Although much of the material has been changed little from that found in previous editions, such recent advances in pharmacology and therapeutics as antibiotics, folic acid, rutin, metapon, and the antihistaminics are discussed.

The usefulness of this book as a text for medical students and as a reference for the practitioner is impaired by the absence of complete references to outstanding papers and recent comprehensive reviews. The book is easily read, and is quite lucid.

In Memoriam

ANNA M. GOVE, M.D.

In the death of Dr. Anna M. Gove, which occurred at the Wesley Long Hospital in Greensboro on January 28, 1948, the Guilford County Medical Society and the entire profession in North Carolina lost a loyal, skillful, and pioneer member. Dr. Gove was the second woman physician in the state, coming to the Woman's College in 1893. She joined the State and county Societies in 1896. As a pioneer woman physician she was somewhat of a curiosity both to her colleagues in the profession and to the students and their parents at the college; but her outstanding skill as a physician, together with her dignity, charm, and sense of humor, soon won her not only their acceptance, but their devoted love and admiration as well.

Dr. Gove was particularly fitted by nature for the role which she filled so admirably for so many years —that of medical advisor and friend to thousands of young women students. To begin with, she had an active and acute mind, and was intensely interested in every phase of medical progress from the time when as a child she drove with her doctor father on his rounds, and listened to him talk, to the very end of her life, when she was still reading

medical literature and attending scientific meetings with far more eagerness than the condition of her eyes or her health warranted. Given this interest and intelligence, she then proceeded to develop it to the very greatest degree possible. There is no doubt that few doctors in North Carolina, or elsewhere, had the training which she insisted upon for herself. A student at the Massachusetts Institute of Technology, and in 1892 a graduate of the Woman's Medical College of the New York Infirmary, she soon felt her need for further work, and in 1896-97 studied in Vienna under such men as Politzer, Adler, Henoch, and Kraft Ebing. During the summer of 1897 she went to Moscow as official delegate from North Carolina and New Hampshire to the International Medical Congress held there that year. Summer sessions were spent at the University of Chicago, Cornell, and later, two succeeding summers at the University of Michigan. Not satisfied, she again applied for leave of absence in 1913 and 1914, and sailed for further study in Vienna.

All this preparation, admirable as it was, might not have fitted her for the role she chose for herself as a college physician. But her personality was eminently suited to her work. Kindliness, interest, and understanding of the problems of every one, but particularly of young women, hospitality that knew no stint, and generosity that was unbounded were her chief characteristics, and would have won her the love of any community in which she worked. However, in Dr. Gove, extras were added which made girls particularly responsive to her. These extras were charm, a light, graceful sense of humor, which was never biting or sarcastic, beautiful clothes worn always with distinction, and a gracious way of living which appealed particularly to college women. Only the other day a senior was reminded that Dr. Gove had given her her routine medical examination. Her face lit up. "Yes," she said. "I remember. She talked to me about birds and I had such a good time." In 1936 the alumnae of the college expressed their love and admiration for her in asking that the Infirmary, built under her supervision in 1912, be named for her.

Dr. Gove's medical accomplishments are many. Her conduct of Student Health Service at the Woman's College for so many years was always progressive and successful. She was a pioneer in the detection and control of tuberculosis in colleges, a work which is now carried on in all of the better colleges. I quote from a letter by the late Dr. Paul McCain, written May 16, 1936: "Dr. Gove has been one of the leaders among college physicians of the United States in trying to stamp out tuberculosis among college students. She has been one of the pioneers in this work and her efforts have been so greatly appreciated by the National Tuberculosis Association that she was requested to read a paper on the subject at the meeting of the National Tuberculosis Association in New Orleans."

Her work at the college was further recognized in 1933 by the vice-presidency of the American Student Health Association, and in 1936 by the chairmanship of an important round-table discussion at the second National Conference on College Health.

Outside of the college her chief medical contribution was her work in Europe during the first World War. She sailed for Europe under the auspices of the American Red Cross in March, 1918, and did clinic work with children and general community work in Marseille and the villages round about until she returned to the United States in August, 1918. She was also connected with the Smith College Unit during part of that time. As at the Woman's College, her helpfulness and skill made her invaluable in all capacities of European medical relief.

Dr. Gove belonged to many scientific organizations. She was an honorary fellow of the North Carolina Medical Society, a member of the American Medical Association, the American Public Health Association, and the American Association for the Advancement of Science—to name only a few.

But it is in the hearts of her patients, her friends, and her colleagues that she will live on—a skillful physician, a loyal friend, and a good companion.

Ruth M. Collings, M.D.
For the Bereavement Committee
of the Guilford County Medical
Society

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REUBEN ADOLPHUS McBRAYER, M.D.

Reuben Adolphus McBrayer was born in Asheville on November 26, 1891. He was the son of Dr. Lewis B. McBrayer and Lillie Cordelia McBrayer. He received his A.B. degree from Wake Forest College in 1911. In 1916 he was graduated from the University of Pennsylvania Medical School and almost immediately thereafter entered the army as a medical officer. He was on active duty in Mexico prior to World War I and later was on active duty in this country. After World War I he was on the staff of the North Carolina Sanatorium for a time. He later practiced internal medicine in Shelby, North Carolina. For a time he was on the staff of the Yale Medical School and Hospital, and later was associate pathologist of the postgraduate hospital of Columbia University.

In 1937 he was appointed Medical Director of the Ciba Pharmaceutical Products, Inc., Summit, New Jersey, and continued in that capacity for the next five years. During this period he was also consultant in endocrinology and associate in pathology for the Overlook Hospital in Summit.

Dr. McBrayer volunteered for medical duty in World War II on the day following Pearl Harbor and reported for active duty as a major in the Medical Corps in January, 1942. He continued on active duty throughout the period of the war, serving one and a half years in the European Theater of Operations, first as commanding officer of the 110th Station Hospital and later as hospital inspector for the European Theater of Operations, where he was in the office of the chief surgeon, E.T.O. At the time of retirement from the army he was a full colonel in the Medical Corps, A.U.S.

Since his retirement, Colonel McBrayer had been making his home in Southern Pines. He is survived by his widow, Myrtle F. McBrayer; a brother, Lewis McBrayer; and a sister, Mrs. Sadie McCain. Dr. McBrayer was a member of the American Medical Association, the North Carolina State Medical and Moore County Medical Societies. He was a fellow of the American College of Physicians, a fellow of the New York Academy of Medicine, and a member of the Association of Military Surgeons of the U. S. A.